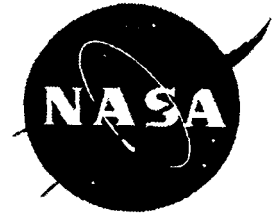


NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600



For Release

Debbie Rahn / Jennifer McCarter
Headquarters, Washington, DC
(Phone: 202/358-1639)

April 3, 1998

George Diller
Kennedy Space Center, FL
(Phone: 407/867-2468)

Ed Campion
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

NOTE TO EDITORS: N98-25

NEUROLAB SHUTTLE MISSION TO LAUNCH APRIL 16

Space Shuttle program managers today affirmed April 16 as the launch date for NASA's second Shuttle mission of 1998 -- a two week life sciences research flight that will focus on the most complex and least understood part of the human body, the nervous system.

The Flight Readiness Review held at NASA's Kennedy Space Center, FL, yesterday is the final major review by all Shuttle project offices to evaluate the readiness of the flight crew and vehicle, along with launch and mission control flight teams, to support the launch of Space Shuttle Columbia on the STS-90 Neurolab mission.

Columbia is scheduled for launch on April 16, 1998 from NASA's Kennedy Space Center Launch Complex 39-B. The 2 1/2 hour available launch window opens at 2:19 p.m. EDT. The STS-90 mission is scheduled to last 15 days, 21 hours, 50 minutes. However, mission managers are reserving an option of extending the flight one additional day for science operations if Shuttle electrical power margins permit. A launch on April 16, and a 16- or 17- day nominal mission would have Columbia landing at Kennedy on May 2 or 3.

The STS-90 Mission Commander is Richard A. Searfoss. Pilot for the flight is Scott D. Altman. There are three mission specialists assigned to this mission -- Richard M. Linnehan, who is also serving as the Payload Commander; Kathryn P. (Kay) Hire; and Dafydd (Dave) Rhys Williams from the Canadian Space Agency. Two payload specialists -- Jay Clark Buckey, Jr., and James A. (Jim) Pawelczyk -- round out the seven member STS-90 crew.

-more-

-2-

STS-90 will be the 25th flight of Columbia and the 90th mission flown since the start of the Space Shuttle program in April 1981.

For complete biographical information on the STS-90 crew and other astronauts, see the NASA Internet astronaut biography home page at URL: <http://www.jsc.nasa.gov/Bios/>

-end-

Video Advisory

National Aeronautics and
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For Release
April 3, 1998

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

VIDEO ADVISORY: V98-37

GALACTIC BODIES THROUGH A RADIO TELESCOPE

Today's video file provides footage of students operating a radio telescope at the newly dedicated Apple Valley Science and Technology Center in Apple Valley, CA. NASA's Jet Propulsion Laboratory allowed the center to utilize a decommissioned tracking antenna, part of NASA's Deep Space Network, as a radio telescope for use via the Internet by students from around the United States.

ITEM 1: RADIO ASTRONOMY

Footage of students at the mission control console and b-roll of the DSS-12 telescope antenna dish at Goldstone, CA.

For more information contact Stephanie Zeluck at (818) 354-0040.

Video news file today at noon, 3, 6, and 9 p.m. EST.

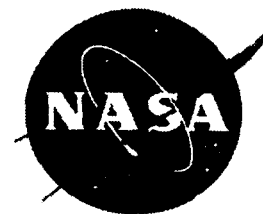
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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For Release

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

April 3, 1998

RELEASE: 98-53

NASA HISTORY WINS PRESTIGIOUS PRIZE

The Organization of American Historians (OAH) has selected "To See the Unseen: A History of Planetary Radar Astronomy," written by Andrew J. Butrica and published by NASA, as the winner of the 1998 Richard W. Leopold Prize. The award will be presented tonight during the 1998 meeting of the OAH in Indianapolis, IN.

The book is part of the NASA History Series produced by the NASA Headquarters History Division, Office of Policy and Plans. In this book, Butrica has provided a comprehensive history of planetary radar astronomy, a little-known but important field of space science, which has significantly expanded scientific knowledge of the solar system through the use of radar over the past 50 years. The technology involves aiming a carefully controlled radar signal at a planet (or some other target -- such as a satellite, an asteroid, or a ring system), detecting its echo, and analyzing the information the echo carries.

The OAH is the largest and most prestigious of all professional organizations dedicated to the study of American history. It awards the Leopold Prize every two years for the best book written by an historian connected with federal, state, or municipal government in the areas of foreign policy, military affairs, the historical activities of the federal government, or biography in one of these areas.

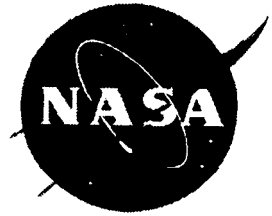
Copies of the book are available to members of the press from NASA. Media representatives should contact Dr. Roger D. Launius, senior NASA Historian, at 202/358-0383. The book is also available to the public from the Superintendent of Documents, Government Printing Office (stock number 033-000-01163-6). For more information, call 202/512-1800.

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For Release

Sarah Keegan
Headquarters, Washington, DC
(Phone: 202/358-1600)

April 3, 1998

John G. Watson
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-54

NASA JOINS IN APPLE VALLEY SCIENCE AND TECHNOLOGY CENTER DEDICATION

NASA has assisted in recycling an old space communications and tracking antenna into a radio telescope for the use of students and teachers around the nation. The telescope is controlled through a new NASA-supported facility to improve and expand science and technology education which was dedicated in Southern California's Apple Valley today.

The Apple Valley Science and Technology Center, renamed the Lewis Center for Education Research in honor of supporter U.S. Representative Jerry Lewis, features an innovative Internet-linked system that allows students across the country to remotely control the resurrected NASA space communications antenna to conduct radio astronomy experiments.

Among those scheduled to participate in the ceremonies today were Mrs. Gayle Wilson, wife of Governor Pete Wilson of California; NASA Administrator Daniel Goldin; NASA Jet Propulsion Laboratory (JPL) Director Dr. Edward C. Stone; retired NASA astronaut Dick Covey; and Congressman Jerry Lewis.

Staffed by a small professional staff and hundreds of volunteers, the Lewis Center for Education Research is a hub of learning for students of all ages interested in meteorology, astronomy, environmental studies and aviation, among many other subjects.

In 1996, the center took over operation of a nine-story-high tracking antenna within the Goldstone site of NASA's Deep Space Network, near Barstow, CA. Instead of tearing down the decommissioned antenna, JPL entered into an agreement allowing the center and the school district to operate the antenna as a radio telescope for use via the Internet by students from around the United States. NASA and JPL staff and volunteers participated in converting the antenna into a radio telescope and linking its control system to classrooms via the Internet.

-more-

Goldin, Lewis, Stone and Wilson were scheduled to staff the center's mission control today to join students in Michigan and Kentucky as they operated the giant radio telescope from their classrooms.

The original Science and Technology Center facility, built nearly 10 years ago, now houses an observatory, Air Force jet flight simulator, computer center, weather station and related hands-on learning tools for students. It has drawn more than 80,000 students and teachers from across the nation. The center, affiliated with the Apple Valley Unified School District, has drawn the support of many business and community leaders from its inception in 1985 for its effective experiments with new, creative educational methods.

In 1997, the center was awarded a federal grant to expand its facilities. In addition to adding offices, the new facility offers several innovative new educational spaces, including mission control, a high-tech control room where students from around the world are able to control the decommissioned Deep Space Network antenna. A digital TV studio, amateur radio station and control room were built with support from NASA and the Desert Community Bank and will allow students to produce and broadcast educational programs to more than 35,000 homes in cooperation with Hi-Desert Cablevision. The facility also features a library, sponsored by the Assistance League of the Victory Valley; and a Gateway to Excellence technology classroom sponsored by GTE, which includes a science education laboratory with a climate-controlled greenhouse.

The center also operates the Academy for Academic Excellence, a K-12 California Public Charter School, chartered by the Apple Valley Science and Technology Center. It combines classroom and lab work at the center with parental schooling in an innovative program to explore new effective learning programs. Classes are offered at the center for both students and parents.

JPL is a division of the California Institute of Technology, Pasadena, CA.

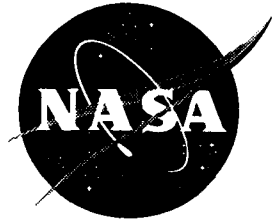
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NOTE TO BROADCASTERS: NASA TV will air a video file about the center throughout the day on April 3. NASA Television is available through GE-2, transponder 9C at 85 degrees West longitude, vertical polarization, with a frequency of 3880 Mhz, and audio at 6.8 Mhz.

Video Advisory

National Aeronautics and
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Debbie Rivera
Headquarters, Washington, DC
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For Release
April 6, 1998

VIDEO ADVISORY: V98-38

AIR TURBULENCE DEVICE COULD MAKE FLYING SAFER

Today's video file provides animation and b-roll of an experimental device that may make air travel safer by detecting previously invisible forms of clear air turbulence and giving pilots time to take safety precautions. Clear air turbulence is the leading cause of in-flight injuries among the flying public. Currently there are no effective warning systems for clear air turbulence. The device, called the Airborne Coherent LiDAR for Advanced In-flight Measurement (ACLAIM), tested at NASA's Dryden Flight Research Center, may solve the problem in detecting dangerous turbulence in enough time to avoid injury.

ITEM 1: ACLAIM ANIMATION

ITEM 1a: INTERVIEW - ROD BOGUE, PROJECT MANAGER, DRYDEN FLIGHT RESEARCH CENTER

For more information contact Dwayne Brown at (202) 358-1726 or Kirsten Williams at (805) 258-2662.

ITEM 2: REPLAY - RADIO ASTRONOMY

Video news file today at noon, 3, 6, and 9 p.m. EST.

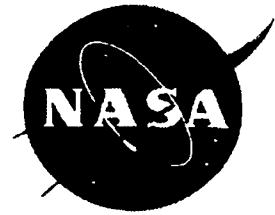
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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For Release

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Headquarters, Washington, DC
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April 6, 1998

Sally V. Harrington
Lewis Research Center, Cleveland, OH
(Phone: 216/433-2037)

RELEASE: 98-55

NASA SATELLITE WILL TAKE STUDENTS TO THE RAINFOREST

Beginning this week, NASA's Advanced Communications Technology Satellite (ACTS) will connect students in selected schools in Iowa, Florida, Texas, New York, Pennsylvania and West Virginia with scientists at a field research site in the Amazon rainforest in Brazil.

The Space Communication Office at NASA's Lewis Research Center, Cleveland, OH, will use ACTS to supply the primary communication links for "Live from the Rainforest," the latest segment of an ongoing series of electronic field trips to scientific frontiers. The links will include both the live video broadcast from the rainforest and a return link from the participating classrooms as well as supplementary audio, fax and Internet connections.

A series of three "Live from the Rainforest" shows will be aired on the Public Broadcasting System on April 7, 14 and 21, 1998, 1-2 p.m. EDT. The series also will be shown on NASA TV, available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

Students will learn about the equipment used to explore the rainforest and the people, plants, animals and insects of the largest expanse of virgin rainforest on the planet.

Engineers from Lewis set up an Earth station at the remote site, where transmissions from the rainforest will be made over ACTS to an Earth station at Lewis. The video/audio signal from Lewis will be downloaded using a terrestrial line to the Mississippi State University (MSU) Television Center, which is connected to various schools for interaction between the students and scientists. NASA equipment at MSU will assure the signal from the participating schools will be downloaded in the proper format to be compatible with the video/audio in the rainforest.

-more-

-2-

Lewis has been demonstrating ACTS' capabilities to provide a wide-bandwidth communication link via satellite to remote locations, where other means of providing this type of communication are not available, since shortly after it was launched aboard the Space Shuttle Discovery in September 1993. ACTS made it possible for Army reservists stationed in Haiti in December 1994 to talk face-to-face with their loved ones back home through videoconferencing. It also has been used to assist in restoring telecommunication service interrupted by natural and manmade disasters. In the field of telemedicine, ACTS technology is being used to evaluate improved techniques for providing women in remote areas with real-time diagnoses of mammograms through clear and quick satellite image transmission.

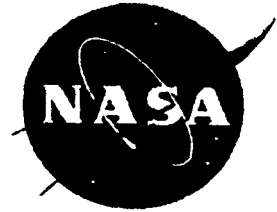
"Live from the Rainforest" is produced by Passport to Knowledge and is supported by the National Science Foundation and NASA.

-end-

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For Release

April 6, 1998

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Langley Research Center, Hampton, VA
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Anatta
National Center for Atmospheric Research, Boulder, CO
(Phone: 303/497-8604)

RELEASE: 98-57

EARLY TESTS SHOW AIR TURBULENCE SENSOR COULD MAKE AIR TRAVEL SAFER

NASA is testing a new sensor that could make air travel safer by detecting previously invisible forms of clear air turbulence and giving pilots time to take safety precautions. Early tests of the new clear air turbulence sensor are promising, officials say.

Clear air turbulence is an invisible safety hazard for aircraft. Though seldom damaging to modern aircraft, which are designed to withstand its stresses, it is the leading cause of in-flight injuries among the flying public.

"During the tests, the system observed turbulent regions of air ahead of the aircraft as it moved forward. The aircraft experienced disturbances as it penetrated the turbulence. In that scenario, if an alarm were sounded when turbulence was first detected, passengers could have quickly returned to their seats and fastened their seatbelts before the encounter," said project manager Rod Bogue of NASA's Dryden Flight Research Center, Edwards, CA.

Flights of the detector originated from Jefferson County Airport, near Broomfield, CO. The experiment was flown on three separate flights for a total of more than seven hours at altitudes as high as 25,000 feet. Additional flights are slated to add to the turbulence database and to fine-tune the sensor for better measurements.

-more-

Currently there are no effective warning systems for clear air turbulence, which occurs at high altitudes near jet streams and in the vicinity of mountain ranges, and as far as 50 miles or more from developing storm systems. It's been referred to as "rough air" or "air pockets," that can be felt, but not seen.

The sensor device, called Airborne Coherent LiDAR for Advanced In-flight Measurement, was designed and built by Coherent Technologies Inc., Lafayette, CO, for NASA. It relies on a form of laser technology called Light Detection and Ranging (LiDAR), to detect changing velocities of tiny particles in turbulent air. As long as the wind velocity remains uniform, no turbulence exists. But if the laser beam detects changes in the velocity, it's a clear indication of turbulence ahead. The laser technology is similar to the more familiar radar and can be envisioned as a kind of infrared radar. Although conventional radar uses radio waves, this laser technology relies on infrared light waves.

"The infrared radar concept uses a light pulse transmitted from the laser, and some of the light is reflected off the particles back to a sensor at the source," Bogue said. "The reflected light has a slight shift in frequency, called a Doppler shift, due to the aircraft's motion relative to the particles. By analyzing the frequency of the Doppler shift, the changes in wind velocity along the laser beam's path can be determined," he said.

During its first flight, the flight crew located turbulent conditions and used the infrared radar to measure the changes in wind speed -- a measure of turbulence -- before flying through the disturbed air. Once the aircraft reached the turbulence, the crew compared the pre-encounter measurements with the effects of the turbulence they experienced. In this way, the team is exploring the relationship between the laser radar-measured turbulence characteristics and the actual turbulence experienced by the aircraft. These tests are designed to provide an efficient checkout of the flight hardware and to help characterize turbulence measurements.

"Not much is known about accurately detecting and forecasting turbulence," said Larry Cornman, scientist for the National Center for Atmospheric Research (NCAR), Boulder, CO. "Through this new device and turbulence research conducted at NCAR, we expect a clearer picture to emerge to make flying safer."

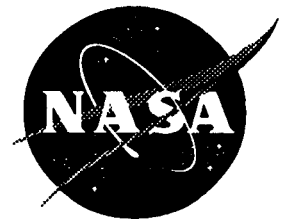
Dryden is using an aircraft owned by the National Science Foundation and operated by NCAR. NCAR is managed by the University Corporation for Atmospheric Research under sponsorship by the National Science Foundation. Other partners for the project include NASA's Langley Research Center, Hampton, VA; NASA's Marshall Space Flight Center, Huntsville, AL; Coherent Technologies, Inc.; Global Hydrology and Climatology Center; Huntsville, AL; Boeing Commercial Airplane Group, Seattle, WA, and the Air Force Research Laboratory Sensor Directorate Multifunction Electro-Optics Branch, Dayton, OH.

Langley is the Agency's lead center for the NASA Aviation Safety program. Other participating NASA centers include Dryden, Ames Research Center, Moffett Field, CA, and Lewis Research Center, Cleveland, OH.

Video Advisory

National Aeronautics and
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For Release
April 7, 1998

Debbie Rivera
Headquarters, Washington, DC
(Phone: 202/358-1743)

VIDEO ADVISORY: V98-39

TAKING THE CRUNCH OUT OF AIR TRAFFIC JAMS

Today's video file provides b-roll of a full-scale, air traffic control tower simulator for testing ways to decrease air and runway problems under realistic airport conditions. In order to help develop and refine airport procedures, this unique facility will be able to simulate any airport in the world.

ITEM 1: AIR TRAFFIC CONTROL TOWER SIMULATOR

For more information contact Dwayne Brown at (202) 358-1726.

ITEM 2: REPLAY - CYDONIA REGION ON MARS

For more information contact Doug Isbell at (202) 358-1753 or Stephanie Zeluck at (818) 354-0040.

ITEM 3: REPLAY - ACLAIM ANIMATION

ITEM 3a: REPLAY - INTERVIEW

Video news file today at noon, 3, 6, and 9 p.m. EST.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
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Washington, D.C. 20546
(202) 358-1600



For Release

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April 7, 1998

Michael Mewhinney
Ames Research Center, Moffett Field, CA
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Les Dorr
Federal Aviation Administration, Washington, DC
(Phone: 202/267-8521)

RELEASE: 98-56

FIRST AIR TRAFFIC CONTROL TOWER SIMULATOR WILL COMBAT POTENTIAL COMMERCIAL AIRPORT TRAFFIC PROBLEMS

NASA has begun construction of a full-scale air traffic control tower simulator that will provide -- under realistic airport conditions and configurations -- a facility that will test ways to combat potential air and runway traffic problems at commercial airports.

Researchers will look primarily at the feasibility, safety, reliability and cost benefits of technologies prior to incorporating them into airports. In addition, testing will provide information that may assist in developing proposed changes to airport ground procedures and on construction of new airport facilities.

"This will be the only one of its kind in the world," said Stan Harke, project manager at NASA's Ames Research Center, Moffett Field, CA. "It will allow the commercial aviation industry to study and correct potential problems in a safe setting before they become actual problems. This will be as real as it can get," he added.

Jointly funded by NASA's Advanced Air Transportation Technologies Office and the Federal Aviation Administration (FAA), the \$9.3 million, two-story building, called the Surface Development and Test Facility, is being built at Ames.

"We will be able to simulate any airport in the world," said Nancy Dorigi, deputy project manager at Ames. "The three-dimensional visual database of the airport will be viewed through the 360-degree window of the simulator. The visual scene, along with specific airport traffic patterns and operating procedures, will give us a very credible simulation capability."

-more-

Computer software, provided by Raytheon Systems Co., Arlington, TX, will be integrated with the tower simulation hardware technologies at Ames to support both radar and out-the-window visual simulation. The facility's second floor is designed to replicate a typical air traffic control tower. The tower cab will have reconfigurable site-specific displays, such as terminal area radar, surface radar and weather, installed based on FAA specifications. Twelve rear-projection video screens will provide a seamless 360-degree high-resolution view of the airport or other scenes being depicted.

These image generators will provide a realistic view of weather conditions, environmental and seasonal effects and the movement of 200 or more active aircraft in the air or on the ground.

The imaging system will be powered by supercomputers and the remainder of the simulation by approximately 100 Pentium processors. Video cameras will record air traffic controllers' activities for human factors research and also provide visitors and researchers unobtrusive remote viewing of simulations in progress.

Ramp controllers, airport operators, simulation engineers, software developers and researchers will be located in separate work areas on the facility's first floor. Also located on the first floor will be a briefing room for simulation participants and visitors, as well as all the computers, displays and communication links necessary for a fully operational airport.

"The principal value of this facility is risk mitigation. We have no business introducing new functions into delicate environments like Chicago O'Hare, Dallas/Fort Worth, Los Angeles, New York or Atlanta, without first shaking them down with the actual users in an environment which very closely replicates the real world," said Dennis Lawson, FAA lead surface management advisor on the project.

The facility is scheduled to begin testing operations in 1999. Project engineering for the facility is provided by the firm of Daniel, Mann, Johnson & Mendenhall, Moffett Field, CA. Project partners also include Oracle Corp., Redwood Shores, CA, and Silicon Graphics Inc., Mountain View, CA. Representatives from the FAA's air traffic control supervisors committee and the National Air Traffic Controller's Association, as well as the Air Transport Association, participated in all phases of the facility's design.

Images of the facility are available via the Internet at the following URL:

http://sdtf.arc.nasa.gov/sdtf/docs/op_envirion.html

News Release

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For Release

April 8, 1998

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NOTE TO EDITORS: N98-26

SPACE STATION MEDIA WORKSHOP SCHEDULED FOR MAY 12-14 AT JSC

Members of the news media are invited to attend press briefings and hands-on demonstrations at training and simulation facilities May 12-14 at NASA's Johnson Space Center, Houston, TX. The activities will provide information about the International Space Station and its five-year assembly in orbit that will begin with launches this year.

The workshop will follow a day of standard preflight media briefings -- on the last Shuttle-Mir docking mission, STS-91 -- that are currently planned for May 11 at Johnson. On May 12, a series of briefings will describe the International Space Station, its current status and its assembly in orbit. On May 13 and 14, media representatives can visit a variety of facilities at Johnson for demonstrations and activities that will provide familiarity with the station and assembly operations.

Media planning to attend the workshop must fax a written request for press accreditation to the Johnson Space Center newsroom at (281) 483-2000 before April 30. Because of limited capacity in some facilities, attendance at the demonstrations may be limited to one reporter and/or camera crew per news media organization. The briefings will be carried live on NASA Television, available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

Planned briefings for May 12 include: (all times EDT)

9 a.m.	International Space Station: Overview and Status
10:30 a.m.	International Space Station: Research and Exploration
1 p.m.	International Space Station: Assembly in Orbit
2:30 p.m.	Flight Control of the International Space Station

-more-

News media at Johnson also will receive details and logistical information concerning coverage of the launch of the first International Space Station component, the Control Module or Functional Cargo Block (FGB), from Russia later this year.

Media demonstrations on May 13-14 will include an opportunity for hands-on activities and briefings by experts in station engineering, training and operations. Several sessions of each demonstration will be held each day, and media will be able to attend in small groups to allow individual attention and participation. The planned demonstrations include:

- Space Station Training Facility – viewing and demonstrations in the U.S. Segment and Russian Segment International Space Station trainers under development at Johnson, including a new Soyuz emergency egress trainer.
- Neutral Buoyancy Laboratory – Adjacent to Johnson's new 6.4-million gallon spacewalk training pool, high-fidelity mockups of the first two components, the Control Module and the Node 1 connecting module, will be displayed, along with demonstrations of spacewalking tools, suits and equipment developed and flight-tested by NASA in preparation for station assembly.
- Shuttle Cockpit Rendezvous Simulators – Demonstrations of the rendezvous and capture activities that will be required to join the Control Module and Node 1 during Shuttle mission STS-88 will be viewed in a domed Space Shuttle aft cockpit simulator, as well as on a desktop rendezvous simulation.
- Virtual Reality Training and Station Mockups – Demonstrations of Johnson's Virtual Reality Laboratory used by astronauts to train for upcoming assembly spacewalks will be performed. Media also will have an opportunity to tour nearby trainers for the Shuttle and station robotic arms; the International Space Station full-scale mockups and trainers; and the X-38 crew return vehicle development facility.

In addition, throughout the three-day workshop, Johnson personnel with expertise on all aspects of the International Space Station program and assembly operations will accommodate as many individual interview requests as possible. Facilities with International Space Station mockups and backgrounds will be available for such interviews.

Video Advisory

National Aeronautics and
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For Release
April 8, 1998

Debbie Rivera
Headquarters, Washington, DC
(Phone: 202/358-1743)

VIDEO ADVISORY: V98-40

GREENHOUSE GASES LEAD TO GLOBAL WARMING AT EARTH'S SURFACE

Today's video file provides animation developed from data collected by satellite-based instruments, operated by NASA, which depict unusually low levels of ozone in the Arctic in 1997. A new study indicates the increase in greenhouse gas emissions is one possible cause of the observed trends in Arctic ozone losses.

- ITEM 1: 1997 ARCTIC OZONE DEPLETION**
- ITEM 1a: OZONE PROTECTS THE EARTH**
- ITEM 1b: OZONE AND CFCs**
- ITEM 1c: STRATOSPHERE**
- ITEM 1d: TOMS SATELLITE**
- ITEM 1e: B-ROLL - SCIENTISTS STUDY OZONE**

For more information contact David Steitz at (202) 358-1730 or Lynn Chandler at (301) 286-9016.

ITEM 2: REPLAY - AIR TRAFFIC CONTROL TOWER SIMULATOR

Video news file today at noon, 3, 6, and 9 p.m. EDT.

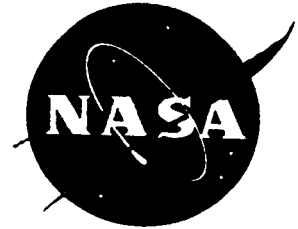
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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For Release

April 8, 1998

Lynn Chandler
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-9016)

RELEASE: 98-58

INCREASING GREENHOUSE GASES MAY BE WORSENING ARCTIC OZONE DEPLETION AND MAY DELAY OZONE RECOVERY

In late 1997, larger levels of ozone depletion were observed over the Arctic than in any previous year on record. Now, using climate models, a team of scientists reports why this may be related to greenhouse gases, according to a paper published in the April 9 issue of *Nature*.

The study suggests the increase in greenhouse gas emissions is one possible cause of the observed trends in Arctic ozone losses and that this may delay recovery of the ozone layer. The research team, consisting of researchers from NASA's Goddard Institute for Space Studies (GISS) and Columbia University, New York, investigated the response of ozone to projected future emissions of greenhouse gases and ozone-depleting halogens over time, using the GISS climate model. This is the first time ever that the interaction between ozone chemistry and the gradual buildup of greenhouse gases has been studied in a climate model.

"Buildup of greenhouse gases leads to global warming at the Earth's surface, but cools the stratosphere. Since ozone chemistry is very sensitive to temperature, this cooling results in more ozone depletion in the polar regions," said Dr. Drew Shindell of Columbia University, the lead author of the study. NASA will continue research in this area to determine if these models are accurate.

The "greenhouse effect" is defined as the warming of climate that results when the atmosphere traps heat radiating from Earth toward space. Certain gases in the atmosphere -- such as water vapor, carbon dioxide, nitrous oxides and chlorofluorocarbons -- act like glass in a greenhouse, allowing sunlight to pass into the "greenhouse," but blocking Earth's heat from escaping into space.

Ozone, a molecule made up of three atoms of oxygen, comprises a thin layer of the upper atmosphere which absorbs harmful ultraviolet radiation from the Sun and protects people, animals and plants from too much ultraviolet sunlight.

-more-

Distribution and concentration of stratospheric ozone are influenced in two ways by human-driven activity in addition to natural, seasonal variations. Of first importance is the direct impact of industrially produced chlorofluorocarbons. Although ozone levels around the globe are expected to continue to decline over the next several years, NASA is now detecting decreasing growth rates of ozone-depleting compounds in the upper part of the atmosphere, indicating that international treaties to protect the ozone layer are working. The second influence on stratospheric ozone levels is the indirect impact of "greenhouse gases" on atmospheric temperatures. Ozone destruction is quite sensitive to temperature increases in the atmosphere.

Since upper atmospheric temperatures in the Northern Hemisphere during winter and spring generally are warmer than those in the Southern Hemisphere, ozone depletion over the Arctic has been much smaller than over the Antarctic during the 1980s and early 1990s. The Arctic stratosphere, however, gradually has cooled over the past few decades resulting in very large ozone depletion, especially during 1996-97.

In the simulations performed by Shindell and his team, temperature and wind changes, induced by increasing greenhouse gases, clearly alter the dynamics of the atmosphere. According to this model, as the abundance of greenhouse gases gradually increases, the frequency of Northern Hemisphere sudden stratospheric warming is reduced, leading to significantly colder lower stratospheric temperatures. If proven correct, this dynamic effect would add to the greenhouse cooling of the stratosphere.

"Results suggest that the combination of these two cooling effects causes dramatically increased ozone depletion so that ozone loss in the Arctic by the year 2020 roughly is double what it would be without greenhouse gas increases," said Dr. David Rind of GISS, a co-author of the paper. Increasing greenhouse gases therefore may be at least partially responsible for the very large Arctic ozone losses in recent winters.

The authors caution, however, that though the model predicts a general trend towards increasing ozone depletion, the year-to-year variability is quite large, especially in the Arctic. For example, several years in the late 1990s and early 2000s show very little Arctic ozone depletion, while others show record losses. In fact, the 1997-98 winter that just occurred was characterized by significantly less ozone loss than the preceding six winters. A factor that should be considered, however, is the consistency in model predictions, i.e. whether the same results can be reproduced by other models.

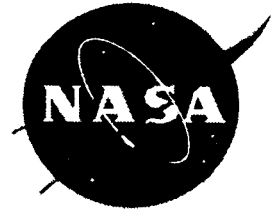
According to this model, the severity and duration of the Antarctic ozone depletion also may increase due to greenhouse gas-induced stratospheric cooling over the coming decades. However, ozone in the Antarctic is already so depleted that any additional losses may be relatively small, Rind added.

The research was conducted by scientists at GISS, The Center for Climate Systems Research, Columbia University, and Science Systems and Applications Inc., New York. The GISS research is part of NASA's Earth Science Enterprise, a long-term coordinated research effort to study the Earth as a global system.

NewsRelease

National Aeronautics and
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Washington, D.C. 20546
(202) 358-1600



For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

April 8, 1998

John Watson
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-59

SCIENCE TEAM CHOSEN FOR TECHNOLOGY VALIDATION MISSION TO EXPLORE THE SUBSURFACE OF MARS

Nine researchers have been selected to be the Science Team for the Mars Microprobes, a technology validation mission that will hitchhike to the red planet aboard NASA's 1998 Mars Polar Lander mission.

Two identical probes will be carried as a secondary payload on the lander, due for launch in January 1999. Following an 11-month cruise, the Microprobes will separate from the lander before it enters the Martian atmosphere, and then hit the ground at approximately 400 mph.

During the impact, each microprobe will separate into two sections: the forebody and its instruments will penetrate up to six feet (two meters) below the surface, while the aftbody will remain near the surface to communicate with a radio relay on NASA's Mars Global Surveyor orbiter while making meteorological measurements.

The nine selected scientists are:

- David Catling, NASA Ames Research Center, Moffett Field, CA
- Ralph Lorenz, University of Arizona, Tucson
- Julio Magalhaes, NASA Ames Research Center
- Jeffrey Moersch, NASA Ames Research Center
- Paul Morgan, Northern Arizona Univ., Flagstaff
- James Murphy, NASA Ames Research Center
- Bruce Murray, California Institute of Technology, Pasadena
- Marsha Presley, Arizona State Univ., Phoenix
- Aaron Zent, NASA Ames Research Center

-more-

The scientific objectives of the Mars Microprobes include searching for the presence of water ice in the soil and characterizing its thermal and physical properties. A small drill will bring a soil sample inside the probe, heat it, and look for the presence of water vapor using a tunable diode laser. An impact accelerometer will measure the rate at which the probes come to rest, giving an indication of the hardness of the soil and any layers present. Temperature sensors will estimate how well the Martian soil conducts heat, a property sensitive to different soil properties such as grain size and water content. A sensor at the surface will measure atmospheric pressure in tandem with a sensor on the Mars Polar Lander.

The Mars Microprobes mission, also known as Deep Space-2 (DS-2), is scheduled to be the second launch in NASA's New Millennium Program of technology validation flights, designed to enable advanced science missions in the 21st century.

"I'm delighted with the selection of this excellent group of investigators. The Mars Microprobe will give us a glimpse of the subsurface of Mars, which in many ways is a window into the planet's history," said Dr. Suzanne Smrekar, the DS-2 project scientist at NASA's Jet Propulsion Laboratory, Pasadena, CA. "The region of Mars we will explore is similar to Earth's polar regions in that it is believed to collect ice and dust over many millions of years. By studying the history of Mars and its climate, we are likely to better understand the more complex system on our own planet."

In addition to the miniaturized science instruments capable of surviving high velocity impact, technologies to be tested on DS-2 include a non-erosive, lightweight, single-stage atmospheric entry system or aeroshell; power microelectronics with mixed digital/analog advanced integrated circuits; an ultra-low temperature lithium battery; an advanced three-dimensional microcontroller; and flexible interconnects for system cabling.

"The combination of a single-stage entry vehicle with electronics and instrumentation that can survive very high impact loads will enable us to design a whole new class of very small, rugged spacecraft for the in-situ exploration of the planets," explained Sarah Gavit, DS-2 project manager at JPL.

"Slamming high-precision science instruments into the surface of Mars at 400 mph is very challenging, no doubt about it! But once this type of technology is demonstrated, we can envision future missions that could sample numerous regions on Mars or make network measurements of global weather and possible Marsquakes," said DS-2 program scientist Dr. Michael Meyer of NASA Headquarters, Washington, DC.

-3-

Further information on DS-2 is available on the Internet at the following URL:
<http://nmp.jpl.nasa.gov/ds2/>

The New Millennium Program is managed by JPL for NASA's Office of Space Science in Washington, DC. JPL is a division of the California Institute of Technology, Pasadena, CA.

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Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
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For Release
April 9, 1998

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

VIDEO ADVISORY: V98-41

EL NIÑO'S SMOKEY LEGACY

Today's video file provides satellite observations of smoke from El Niño driven fires in northern Brazil, Venezuela and Indonesia during 1997 and 1998. The observations were taken by Total Ozone Mapping Spectrometer (TOMS) instruments on board NASA's Earth Probe (TOMS-EP) satellite.

ITEM 1: SOUTH AMERICA (VIEW FROM TOMS)
ITEM 1a: INDONESIA (VIEW FROM TOMS)
ITEM 1b: INDONESIA -- VIEW FROM SEAWIFS
ITEM 1c: PRECIPITATION ANOMALIES - GLOBAL
ITEM 1d: PRECIPITATION ANOMALIES - REGIONAL
ITEM 1e: TOMS SATELLITE

For more information contact David Steitz at (202) 358-1730 or Wade Sisler at (301) 286-6256.

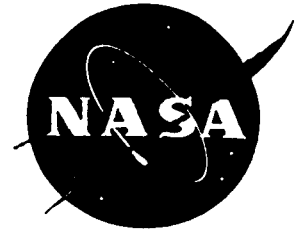
ITEM 2: REPLAY - 1997 ARCTIC OZONE DEPLETION
ITEM 2a: REPLAY - OZONE PROTECTS THE EARTH
ITEM 2b: REPLAY - OZONE AND CFCs
ITEM 2c: REPLAY - STRATOSPHERE
ITEM 2d: REPLAY - TOMS SATELLITE
ITEM 2e: REPLAY - B-ROLL - SCIENTISTS STUDY OZONE

Video news file today at noon, 3, 6, and 9 p.m. EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease



National Aeronautics and
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Washington, DC 20546
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Headquarters, Washington, DC
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For Release
April 10, 1998

Allen Kenitzer
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-2806)

RELEASE: 98-60

NASA FINDS PROBLEMS IN EOSDIS FLIGHT OPERATIONS SOFTWARE DEVELOPMENT

NASA has found software performance problems with ground system software required to control, monitor and schedule science activities on the Earth Observing System (EOS) series of spacecraft.

Officials believe these problems will delay the software which will impact the launch date for the Earth Observing Spacecraft AM-1. The launch, originally planned for late June 1998, from Vandenberg Air Force Base, CA, will be delayed at least until the end of the year.

The Ground Control Software, called the "Flight Operations Segment" (FOS) software, is part of the Earth Observing System Data and Information System (EOSDIS), the ground system responsible for spacecraft control, data acquisition, and science information processing and distribution for NASA's Earth Science enterprise, including the EOS flight missions.

The problem is with the EOSDIS control center system FOS software that supports the command and control of spacecraft and instruments, the monitoring of spacecraft and instrument health and safety, the planning and scheduling of instrument operations, and the analysis of spacecraft trends and anomalies.

What was supposed to have been the final version of the software was delivered to NASA by Lockheed Martin on March 31, to support integrated simulations with the EOS AM-1 spacecraft. Testing of this software delivery revealed significant performance problems. Program managers expect it to take several weeks to clearly understand whether correcting the current software or taking other measures is the best approach.

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"We're concurrently looking at commercial off-the-shelf technology that was not available when this software system initially was designed," said Arthur "Rick" Obenschain, project manager for EOSDIS at NASA's Goddard Space Flight Center, Greenbelt, MD. "If for some reason the current software problems can't be fixed, we have a backup plan."

Prior to the March 31 delivery, there were three previous incremental deliveries of the software in August 1997, December 1997 and February 1998. Previous versions of the software successfully demonstrated real-time commanding functions with the AM-1 spacecraft. In the new version, however, a number of problems identified in the previous software deliveries were not corrected as expected, and significant problems were found in the new capabilities. Problems include unacceptable response time in developing spacecraft schedules, poor performance in analyzing spacecraft status and trends from telemetry data, and improper implementation of decision rules in the control language used by the flight team to automate operations.

Government/contractor teams have been formed to evaluate options for correcting these problems to minimize impact on the AM-1 launch. A recovery plan is being developed and will be reviewed during the last week of April.

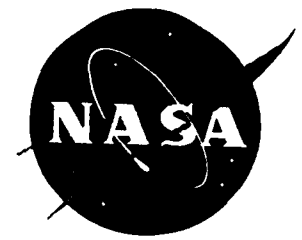
The FOS is being developed by Lockheed Martin under subcontract to Raytheon Information Systems Company under the EOSDIS Core System contract. The Flight Operations Segment of the EOSDIS software has cost \$27.5 million as of February 1998.

THE EOSDIS and EOS AM-1 are part of NASA's Earth Science enterprise, a long-term research program designed to study Earth's land, oceans, atmosphere, ice and life as a total integrated system. Goddard manages the development of EOSDIS and EOS AM-1 for NASA's Office of Earth Science, Washington, DC.

NewsRelease

National Aeronautics and
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For Release

Brian Welch
Headquarters, Washington, DC
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April 13, 1998

Ed Campion
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-61

PRESIDENT CLINTON TO VISIT JOHNSON SPACE CENTER

President Bill Clinton will visit NASA's Johnson Space Center on Tuesday, April 14 for briefings on various NASA programs. During the visit, the President will meet with Senator John Glenn, now in training for an October space flight, and get a briefing on Shuttle mission STS-90, scheduled for launch on Thursday.

The President will place a phone call to the STS-90 crew members at the Florida launch site, and address Johnson Space Center employees and invited guests. The President's call to the STS-90 crew and his address to employees will be carried live on NASA Television beginning at approximately 12:30 p.m. EDT.

NASA Administrator Daniel S. Goldin and Johnson Director George W.S. Abbey will escort the President during his tour.

News media who wish to cover the Presidential visit should fax a request for press accreditation to the Johnson Newsroom at 281/483-2000. Badges will be available Tuesday morning at the Security Office, Bldg. 110, adjacent to the center's main gate off NASA Road One. Television media should plan to arrive at Johnson no later than 6 a.m. CDT to allow time for badging. Print media should arrive at the badging office no later than 8 a.m. CDT. Transportation to events will be provided from the Bldg. 2 news center.

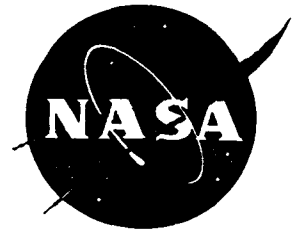
NASA Television is available on GE2, Transponder 9C, at 85 degrees west longitude, with vertical polarization. Frequency is 3880.0 Mhz, audio 6.8 Mhz.

-end-

News Release

National Aeronautics and
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Washington, DC 20546
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(Phone: 202/358-0873)

For Release

April 13, 1998

John Bluck
Ames Research Center, Moffett Field, CA
(Phone: 650/604-5026)

RELEASE 98-62

STUDENTS OBSERVE IMPACT OF SPACE TRAVEL ON NERVOUS SYSTEM

Students from around the world are learning about the next Space Shuttle mission, called Neurolab, by logging onto the Internet at:

<http://quest.arc.nasa.gov/neuron>

They are learning how scientists, technicians and astronauts are preparing for the STS-90 mission, scheduled for liftoff April 16. Neurolab will study the effects of weightlessness on the nervous system.

"NASA is breaking a time barrier by enabling students to interact with Neurolab researchers via the Internet long before any new information is printed in textbooks," said Linda Conrad, NeurOn (Neurolab Online) Project Manager at NASA Ames Research Center, Moffett Field, CA. "About 50 scientists, engineers and the Shuttle and ground crews are working with students and educators through the Internet project."

The NASA on-line mentors upload biographies and field journals to the NeurOn Internet pages. NASA employees from Ames, Johnson Space Center, Houston, TX, and Kennedy Space Center, FL, will answer students' e-mail questions and will participate in "Web chats" with youngsters and teachers. During Internet chats, young people use computers to converse with mentors by typing questions and reading responses and dialogue via the World Wide Web.

NASA scientists note that, even after 50 years, they know very little about the way the brain and nervous system are affected by space flight. NASA's Neurolab mission is expected to answer many questions about the way the nervous system reacts to microgravity.

- more -

There are 26 experiments scheduled for Neurolab. "Lesson plans for teachers are available on the website so they can more easily integrate NeurOn activities related to the experiments into the classroom," Conrad said.

The young students monitor activities of ground crew members as they assemble hardware and prepare provisions such as food and water, for the 16-day mission aboard the Shuttle Columbia. A seven-member astronaut crew will conduct the experiments.

In their classrooms, students will simulate mission activities to better understand the Neurolab mission. The NeurOn website includes a section that displays projects for youngsters and galleries of student work.

The NeurOn project is one of many Internet offerings from NASA's Quest Project at:

<http://quest.arc.nasa.gov>

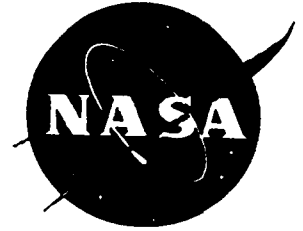
These interactive projects connect students with NASA employees and are designed to inspire young people to pursue careers in high technology.

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NewsRelease

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For Release

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April 16, 1998

Dave Drachlis
Marshall Space Flight Center, Huntsville, AL
(Phone: 205/544-0034)

Wallace Tucker
AXAF Science Center, Smithsonian Astrophysical Observatory, Cambridge, MA
(Phone: 760/728-7103)

RELEASE: 98-63

NASA ANNOUNCES CONTEST TO NAME X-RAY OBSERVATORY

NASA is searching for a new name for the Advanced X-ray Astrophysics Facility (AXAF), currently scheduled for launch Dec. 3, 1998, from the Space Shuttle Columbia. AXAF is the third of NASA's Great Observatories, after the Hubble Space Telescope and the Compton Gamma Ray Observatory. Once in orbit around Earth, it will explore hot, turbulent regions in the universe where X-rays are produced.

Dr. Alan Bunner, director of NASA's Structure and Evolution of the Universe science program, will announce April 18 at the National Science Teacher's Association meeting in Las Vegas, NV, the start of a contest, open to people worldwide, to find a new name for the observatory.

Entries should contain the name of a person (not living), place, or thing from history, mythology, or fiction. Contestants should describe in a few sentences why this choice would be a good name for AXAF. The name must not have been used before on space missions by NASA or other organizations or countries.

The grand prize will be a trip to NASA's Kennedy Space Center in Cape Canaveral, FL, to see the launch of the satellite aboard the Space Shuttle. Ten runner-up prizes will be awarded and all entrants will receive an AXAF poster.

The grand prize is sponsored by TRW Inc., AXAF's prime contractor. The AXAF Science Center in Cambridge, MA, will run the contest for NASA. NASA will announce the final selection of the winning name later this year.

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Contest rules, electronic entry forms, and additional information can be found on the Internet at: <http://asc.harvard.edu/contest.html>

Entries also can be mailed to: AXAF Contest, AXAF Science Center, Office of Education and Public Outreach, 60 Garden Street, MS 83, Cambridge, MA 02138. Mailed entries must be postmarked no later than June 30, 1998. All entries must state a name for the mission, along with the reason the name would make a good choice.

The observatory, now in the final stages of assembly and testing at TRW's facility in Redondo Beach, CA, is more than 45 feet long and weighs 10,500 pounds. AXAF is the largest and most powerful X-ray observatory ever constructed, and its images will be more than ten times sharper than any previous X-ray telescope. This focusing power of the telescope is equivalent to the ability to read a newspaper at a distance of half a mile.

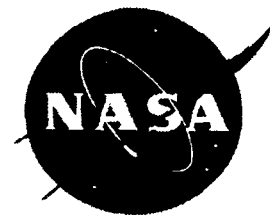
Cosmic X-rays are produced by violent events, such as when stars explode or galaxies collide. X-rays also are emitted by matter heated to many millions of degrees as it swirls toward a black hole. The only way to observe these and other extremely hot astronomical sources is with a space-based X-ray telescope.

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NewsRelease

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For Release

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April 17, 1998

John Watson
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-64

DEEP SPACE 1 LAUNCH RESCHEDULED TO OCTOBER

The planned July 1998 launch of NASA's Deep Space 1 technology validation mission from Cape Canaveral, FL, has been rescheduled for October.

The delay is due to a combination of late delivery of the spacecraft's power electronics system and an ambitious flight software development schedule, which together leave insufficient time to test the spacecraft thoroughly for a July launch.

The power electronics system regulates and distributes power produced by not only the solar concentrator array, a pair of experimental solar panels composed of 720 cylindrical Fresnel lenses, but also by an on-board battery. Among many other functions, it helps the solar array to operate at peak efficiency, and ensures that the battery is able to cover temporary surges in power needed so that the ion propulsion system (which needs electricity for its basic operations) receives a steady power supply.

"With a new launch date for this bold mission, we can be more confident that we will be ready to fully exercise our payload of important technologies," explained Chief Mission Engineer Dr. Marc Rayman of NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA. "The entire DS1 team looks forward to this opportunity to make a significant contribution to science missions of the future through the capabilities we are testing on DS1."

Deep Space 1 is the first launch in NASA's New Millennium program, a series of missions designed to test new technologies so that they can be confidently used on science missions of the 21st century. Among the 12 technologies the mission is designed to validate are ion propulsion, autonomous optical navigation, a solar power concentrator array and an integrated camera and imaging spectrometer.

-more-

-2-

The earlier July launch period for DS1 allowed it to fly a trajectory encompassing flybys of an asteroid, Mars and a comet. By the end of May, the mission design team is scheduled to finalize new target bodies in the Solar System for DS1 to encounter based on an October launch date.

The New Millennium Program and Deep Space 1 are managed by JPL for NASA's Office of Space Science, Washington, DC. JPL is a division of the California Institute of Technology.

- end -

NewsRelease

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For Release

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April 20, 1998

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RELEASE: 98-66

NASA HOSTS WEB CHATS FOR "TAKE OUR DAUGHTERS TO WORK DAY"

Hundreds of thousands of young people from around the globe are expected to use the Internet to "chat" with prominent women on April 23, "Take Our Daughters to Work Day."

Ten women will be interviewed via World Wide Web chats enabled by NASA. During the chats, young people will use computers to converse with the women by typing questions and reading responses and dialogue via the World Wide Web.

"We have designed this event to give young people who cannot otherwise speak with women in the work force the opportunity to meet on-line and discuss opportunities in a variety of careers," said executive producer Tish Krieg of NASA's Ames Research Center, Moffett Field, CA, where the event will originate. "The women also will provide insight into the professional and personal aspects of their lives."

The one-hour web chats will take place on Thursday, April 23, from 9 a.m. to 7 p.m., EDT. The Internet URL is:

<http://quest.arc.nasa.gov/women/intro.html>

The women include: Judy Woodruff, Cable News Network anchor; Jessica Stern, expert on terrorism and weapons of mass destruction, who was the model for the film "The Peacemaker"; Chitra Divakiruni, novelist and author of the best sellers "Arranged Marriage" and "Mistress of Spices"; Leslie Ann Jones, multiple Academy Award winner for film scoring at Skywalker Sound; Donna Shirley, manager of the Mars Exploration Directorate at NASA's Jet Propulsion Laboratory, Pasadena, CA; Kim Polese, Chief Executive Officer of Marimba, Inc.; Lynda Plettner, professional dog musher and six-time finisher of the Iditarod race; Loretha Jones, executive producer of "The Parenthood" weekly television show; Stephanie Herman, Principal Ballerina and founder of Esprit de

- more -

Danse; and Susan Kovalik, author and pioneer in the brain-compatible learning movement.

Participation is easy. "If you have a personal computer with Internet access and web browser software, you can log onto the NASA site to see a schedule, background information about the women, chat instructions and pre-registration materials. Then, on April 23, go to the chat room, and follow directions," Krieg said.

"Because the capacity for interactive questions is limited, a first-come, first-served pre-registration via the Internet is necessary for youngsters to be able to chat," she said. "All others can observe the conversations, which will be very informative and exciting experiences in themselves," she said.

The Daughters' Day virtual event is sponsored by the "Women of NASA" project, one of many interactive projects provided by NASA's K-12 Internet Initiative at Ames. The "Women of NASA" project includes weekly chats with NASA women, said Ames' Learning Technologies Project manager Karen Traicoff. The Learning Technologies Project supports Women of NASA and the other projects.

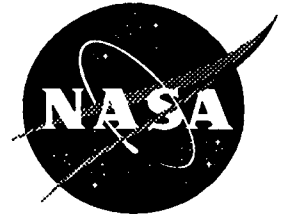
"The overall mission of our projects is to bring NASA into the classroom," Krieg added. "We sponsor on-line, interactive Internet activities that connect students with NASA people and their work. If we can give children opportunities to personally interact with professionals, then learning becomes an exciting experience," she said.

The Learning Technologies Project is managed by NASA's High Performance Computing and Communications Program at NASA Headquarters, Washington, DC.

Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
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For Release
April 21, 1998

Debbie Rivera
Headquarters, Washington, DC
(Phone: 202/358-1743)

VIDEO ADVISORY: V98-44

PLANETS UNDER CONSTRUCTION

Today's video file provides images showing the clearest evidence yet of a solar system forming around the nearby star, HR 4796.

ITEM 1: STARS OF WONDER

Images of HR 4796 taken by the Keck Observatory.

ITEM 1a: ANIMATION - FORMATION OF SOLAR SYSTEM

ITEM 1b: KECK OBSERVATORY, HAWAII

ITEM 1c: INTERVIEW - MICHAEL WERNER, JPL

For more information contact Don Savage (202) 358-1727 or Scott Chavez (818) 354-9382.

Video news file today at noon, with repeats during the crew sleep cycle for the remainder of the STS-90 mission.

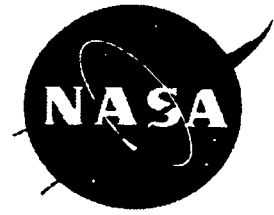
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
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For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

April 22, 1998

Lanee Cooksey
Stennis Space Center, MS
(Phone: 228/688-3341)

RELEASE: 98-67

NEW DEVICE DETECTS PLANT STRESS EARLIER

Thanks to a new imaging tool developed at NASA's Stennis Space Center in South Mississippi, farmers and foresters may now be better able to detect unhealthy crops and trees before the damage becomes visible to the naked eye -- information that may be used to increase crop production.

Developed by NASA's Bruce Spiering, an electrical engineer at Stennis, the Portable Multi-spectral Imaging System -- an evolution of the basic color television camera -- gives the viewer a picture of which plants are under stress.

"Until now, there was no fast and relatively easy way to acquire multi-spectral, matched images," Spiering said. "This system allows the images to be processed and immediately displayed as they are acquired."

The system provides researchers with a new tool for gathering this information. Multi-spectral imaging is the use of several individual parts of the light spectrum -- specific wavelengths of light -- to look at objects in different ways and to obtain many different types of information about the objects.

The new imager has two benefits over earlier imaging systems. First, each component of the system can be adjusted so that separate images can be processed and combined automatically by application-specific signal processors attached to the system. This provides an instant multi-spectral view of the target while reducing the need for processing the image in a lab. Traditional collecting of multi-spectral information involved use of cameras that recorded information about a specific part of the light spectrum. Images in different wavelengths of light were then combined and processed at a later time. This was a time and labor-intensive process. Second, the use of off-the-shelf parts makes the imager easily adaptable to any application.

-more-

One application of the imaging system being researched is the detection of plant stress in crops and forests. The new system currently is designed for use on the ground, but will soon be adapted for use in light aircraft.

Plant stress is the adverse reaction of plants to environmental conditions that are unfavorable to growth, such as lack of sufficient nutrients, inadequate watering, disease or insect infestation. The reaction with which most people are familiar is a change in leaf color, but research has found that in many cases, pre-visible signs of stress can be detected using the proper instruments and techniques.

Plant stress can be monitored, in part, by observing variations of the plant's reflectance in two specific wavebands of light. Relative levels of chlorophyll, the pigment that enables photosynthesis and gives plants their green color, can be determined by measuring the plant's reflectance of light in those parts of the spectrum. If the plant is under stress, its chlorophyll production typically decreases, which results in more light being reflected from the plant to the imager.

"When used in this application, the multi-spectral imaging system along with the real-time processor immediately provides the user with an indication of the amount of chlorophyll in the plant's leaves," Spiering explains. "Previously, the process required the recording of multiple images of the same scene. The images were then matched and aligned with each other, processed and then made available for display only on a computer."

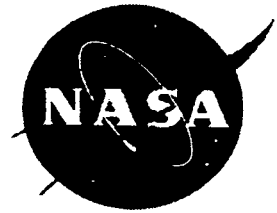
Another possible application of the device would be to identify ice on the Space Shuttle external tank prior to launch. The system would record a near-infrared band image that could identify the location of ice, frost or condensing water, and would then record a second, thermal infrared image to determine the temperature at those locations. The system would combine those two separate images instantly to identify patches of ice on the tank. This application is based on a technique that uses thermal imaging to locate the colder areas on the tank where ice could form. This would be an extension of the work already being done at NASA's Kennedy Space Center, FL.

The imager also can be modified for use as an instrument to detect hydrogen fires at such facilities as rocket test stands and other industries that use hydrogen. Hydrogen burns so cleanly that hydrogen fires are practically invisible to the human eye. Several imaging systems already exist for this application, but the Portable Multi-spectral Imaging System can be easily reconfigured to test different cameras and light filters to fine-tune the system for a variety of applications.

NewsRelease

National Aeronautics and
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Washington, D.C. 20546
(202) 358-1600



For Release

Don Nolan-Proxmire
Headquarters, Washington, DC
(Phone: 202/358-1983)

April 22, 1998

Jerry Berg
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0034)

RELEASE: 98-68

NASA TESTS HAIR-RAISING TECHNIQUE TO CLEAN UP OIL SPILLS

Most folks with oily hair use shampoo to get the oil out. But one Alabama hairdresser likes oily hair and is working with NASA to use human hair to soak up oil spills. Researchers at NASA's Marshall Space Flight Center in Huntsville, AL, are testing this hair-raising recovery technique for oil spilled in water.

The idea is the inspiration of Phillip McCrory, a Madison, AL, hairdresser. McCrory was watching television coverage of 1989's oil spill in Alaska's Prince William Sound. "I saw an otter being rescued whose fur was saturated with oil," said McCrory. "I thought, if animal fur can trap and hold spilled oil, why can't human hair?"

In a home experiment, McCrory stuffed five pounds of hair he'd cut into a pair of his wife's pantyhose. He tied the ankles of the hosiery together to form a ring-shaped collection bundle. Then, filling his son's wading pool with water, he put the hair-filled ring of hosiery into the center of the pool and poured used motor oil into the middle.

"When I pulled the legs of the hosiery ring together, the oil had adsorbed onto the hair inside of it," McCrory said. "I couldn't see a trace of oil in the water." McCrory found that human hair adsorbs -- rather than absorbs -- oil. That is, instead of bonding with the hair, the oil gathers in layers on the hair's surface. This allows for easy recovery of the oil and its reuse by simply squeezing it from the collection bundles.

"When I wrung the hosiery out, most of the oil was recovered," said McCrory. "The remainder was broken down and disposed of when I washed the hosiery with detergent."

-more-

Before McCrory invested more time and money into his idea, he needed to determine that his was an original idea -- that no one else had thought of this solution. He researched and found patents similar to his idea that involved using sheep's wool and duck feathers. Wool and duck feathers, however, are commodities in demand for items like clothing and insulation and don't adsorb as well as human hair.

"After doing my research," said McCrory, "I realized I'd found a commercial use for what's really a waste product. Tons of human hair are cut every day and tossed into landfills." Because some samples of human hair have been found that are thousands of years old, McCrory believes using it to clean up oil spills would both put it to work and reduce the amount of waste material going into landfills. Furthermore, oil-saturated bundles of hair can be burned as fuel and the energy value that the collection bundles contain can be recovered.

McCrory, who lives near Marshall, approached the Center's Technology Transfer Office with the proposal that NASA test his idea under controlled laboratory conditions. Marshall agreed because its researchers believed it had potential use by NASA and other U.S. government agencies.

Successful preliminary field tests also influenced Marshall's decision to test McCrory's system further. In an initial test, David Glover, a chemical systems supervisor for Marshall contractor BAMSI, Inc., filled a 55-gallon oil drum with 40 gallons of water and 15 gallons of oil. "The mixture was filtered through nylon bags filled with hair," said Glover. "When the water was tested after just a single pass through McCrory's innovative filter, only 17 parts of oil per million parts of water remained."

McCrory estimates that 25,000 pounds of hair in nylon collection bags may be sufficient to adsorb 170,000 gallons of spilled oil. Preliminary tests show that a gallon of oil can be adsorbed in less than two minutes with McCrory's method.

There's also a potential cost savings in McCrory's method. Present oil cleanup methods cost approximately \$10 to recover a gallon of oil. McCrory's system may cost as little as \$2 per gallon and offers the additional benefit of being able to use the recovered oil for fuel. McCrory has founded and is president of his own company, BEPS Inc., of Madison, AL.

Tests of the new system are expected to be completed later this spring.

Media Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600



For Release

April 23, 1998

Sonja Alexander
Headquarters, Washington, DC
(Phone: 202/358-1761)

MEDIA ADVISORY

NASA TO SPONSOR CAREER EXPLORATION DAY APRIL 28

NASA Headquarters' Office of Equal Opportunity & Diversity Management along with Dr. Samuel Metters, CEO and Chairman of the Board for Metters Industries, Inc., will co-sponsor a career outreach initiative for students in the Junior Reserve Officer Training Corps and the Honor Society from schools in the Washington, DC, metro area. NASA Administrator Daniel S. Goldin will be the keynote speaker. The event is scheduled for 9 a.m. EDT on April 28 at the Showplace Arena/Equestrian Center, Upper Marlboro, MD.

The program goal is to encourage the students to consider vocations and academic disciplines in fields such as aviation, engineering, science, and other technical areas.

This year's theme is "Encouraging Today's Youth to Take Control of Their Future."

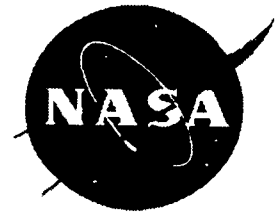
In addition, there will be other NASA professionals available to talk to the students. Representatives from other Federal agencies, colleges and universities, private industry and foundations will be staffing booths in the exhibit area to disseminate information and hold workshops and mini-discussions.

-end-

NewsRelease

National Aeronautics and
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Washington, D.C. 20546
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For Release

Michael Braukus
Headquarters, Washington, DC
(Phone: 202/358-1979)

April 23, 1998

NOTE TO EDITORS: N98-29

CHABROW REPORT TO BE AVAILABLE ON THE NASA HOME PAGE

The cost assessment and validation task force, an independent committee chaired by Jay Chabrow, has completed its report on the International Space Station. The complete report will be available electronically this afternoon.

In September 1997, NASA Administrator Daniel S. Goldin asked Jay Chabrow to establish a task force for the independent review and assessment of costs, budgets and partnership performance on the International Space Station program and to provide advice and recommendations to the NASA Advisory Council. The objective of this activity was to provide advice and recommendations for cost-effective modifications to the present business structure and cost management practices of the program, and to determine the total cost over the life of the program.

Media can review a copy of the report after noon EDT in the NASA newsrooms at NASA Headquarters, Washington, DC; Johnson Space Center, Houston, TX; Marshall Space Flight Center, Huntsville, AL; and Kennedy Space Center, FL. At 2 pm EDT the report will be available on the NASA Home Page at URL:

<http://www.nasa.gov/cavtf/index.html>

- end -

Video Advisory

National Aeronautics and
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Washington, DC 20546
(202) 358-1600



For Release
April 24, 1998

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

VIDEO ADVISORY: V98-45

REMOTE SENSING HELPS BUILD ROADS

Today's video file provides remote sensing images, gathered by NASA's John C. Stennis Space Center in Mississippi, that are being used by the Mississippi Department of Transportation to determine the best routes for highways and other transportation projects. Projects using this technology have a shorter implementation time and ultimately will save taxpayers money.

ITEM 1: REMOTE SENSING HELPS BUILD ROADS

Footage of project participants working with remote sensing imagery.

**ITEM 1a: RICHARD CAMPANELLA, REMOTE SENSING/GIS SPECIALIST,
FORMERLY OF LOCKHEED MARTIN STENNIS OPERATIONS,
NOW WITH THE INSTITUTE FOR TECHNOLOGY
DEVELOPMENT SPECTRAL VISIONS**

**ITEM 1b: TOM STANLEY, NASA AEROSPACE TECHNOLOGIST,
COMMERCIAL REMOTE SENSING PROGRAM OFFICE,
STENNIS SPACE CENTER**

For more information contact Don Nolan-Proxmire at (202) 358-1983 or Lane Cooksey at (228) 688-3341.

Video news file today at noon, with repeats during the crew sleep cycle for the remainder of the STS-90 mission.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

News Release

National Aeronautics and
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Washington, DC 20546
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For Release

Don Nolan-Proxmire
Headquarters, Washington, DC
(Phone: 202/358-1983)

April 24, 1998

Lanee Cooksey
Stennis Space Center, MS
(Phone: 228/688-1957)

RELEASE: 98-69

NASA'S COMMERCIAL REMOTE SENSING PROGRAM AIDS IN HIGHWAY PLANNING

The Commercial Remote Sensing Program at NASA's Stennis Space Center, MS, recently applied its comprehensive remote sensing capabilities to highway routing plans for the Mississippi Department of Transportation (MDOT).

The highway, a connecting route between Hernando, MS, and Collierville, TN, is still being planned but by using remote sensing, the time needed for planning may be significantly reduced while the quality of the route may be enhanced.

Remote sensing -- the observation of the surface of the Earth from distant vantage points, usually from sensors mounted on aircraft or satellites -- provides images to make detailed maps of selected study areas.

The remotely sensed images gathered for the MDOT project were used to form a highly accurate, digital map database to determine the best route for a highway. By having a synoptic view of the proposed route, planners can determine what transportation infrastructure, buildings, industrial facilities, water bodies, farmlands, forests, wetlands and geological features are present.

The project began in October 1997 when supervisors from the Mississippi Department of Transportation visited Stennis and viewed a demonstration of possible applications of remote sensing for transportation issues. Richard Campanella of Lockheed Martin Stennis Operations, part of the team that worked on the project, was present at that demonstration. "They (MDOT) were interested in researching new techniques to do their job better," Campanella said. "NASA was interested in extending remote sensing technology to the state agencies for the benefit of the state."

-more-

After a meeting with MDOT engineers that outlined their requirements, a prototype model was designed to help select the optimal highway route. Campanella, working with Jim Johnson of the Institute for Technology Development - Spectral Visions, took the engineers' requirements, and transformed them into data sets that would be integrated into a Geographic Information System model.

This provided an analysis and visualization tool that allowed viewing and modelling of the 20-mile by 5-mile area under consideration. The model contained about a dozen layers of criteria that influence route planning: utility corridors, civic structures, natural deposits, water bodies, flood zones, homes and businesses, wetlands and farmlands. One advantage that remote sensing presents in transportation planning is the reduction in time. By doing the preliminary planning with the computer model, what used to take at least a year can now take as little as a few months.

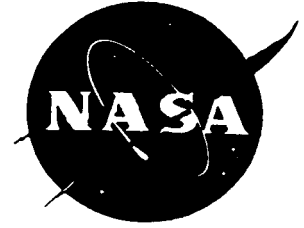
"The success of this model demonstrates the usefulness of remote sensing in the planning of roadways and other elements of our transportation infrastructure," said Tom Stanley with the Commercial Remote Sensing Program at Stennis. "Transportation projects using this technology will be implemented more quickly at less cost to the public. Use of remote sensing also can balance environmental and other considerations that can cause enormous delays to a project."

Campanella is quick to point out that models will not replace people in the field conducting the survey work. "At the actual site engineering level, you will always need surveyors in the field collecting highly accurate field data," Campanella said. "Remote sensing can be used to support those field crews to make sure the area they're characterizing is the optimal route for the road."

News Release

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For Release

Dwayne Brown
Headquarters, Washington, DC
(Phone: 202/358-1726)

April 28, 1998

Michael Mewhinney
Ames Research Center, Moffett Field, CA
(Phone: 650/604-3937)

RELEASE: 98-70

FIRST REPLICA OF HISTORIC 1903 WRIGHT FLYER TO BE DISPLAYED

The first full-scale replica of the historic 1903 Wright Flyer arrived today at NASA's Ames Research Center, Moffett Field, CA, in preparation for public display this spring and wind tunnel tests next January.

The replica is scheduled for a two-week test in Ames' 80-foot x 120-foot wind tunnel -- the world's largest. During the test, project engineers will study the replica's stability, control and handling at speeds up to 30 mph in the wind tunnel. Test results will be used to compile an historically accurate aerodynamic database of the Wright Flyer.

Constructed by a team of volunteers from the Los Angeles section of the American Institute of Aeronautics and Astronautics (AIAA), using plans provided by the Smithsonian, the replica features a 40-foot-4-inch wingspan reinforced with piano wire, cotton wing coverings, spruce propellers and a double rudder.

"I can't think of anything as exciting as using modern technology to test a replica of the biplane that Orville and Wilbur Wright flew for the first time ever in 1903 at Kitty Hawk," said Pete Zell, Ames' wind tunnel test manager. "NASA is here as a resource for the public and to inspire young people. This project seeks to educate and inspire youth; it's much more than dollars and cents."

Although it will replicate the 1903 Wright Flyer in design, size, appearance and aerodynamics, some changes have been made to strengthen the plane when it is mounted in the wind tunnel.

The full-scale replica was built with precise data using Smithsonian drawings from the original airplane. Data obtained from testing on this full-scale replica will provide a sound technical basis for improving the flying qualities and safety for the second full-scale airplane -- yet to be constructed. In the wind tunnel, the replica will be powered by a NASA electric motor.

-more-

"The work of the Wright Brothers founded the science and technology of aeronautics, and their accomplishments form one of the grandest chapters in history," said Jack Cherne, TRW engineer and chairman of the Wright Flyer Project.

In contrast to the Wright brothers, who took less than a year to build their biplane, AIAA volunteers have spent their Saturdays for the past 18 years planning and assembling the replica.

It also has undergone special testing as a prerequisite for entering the NASA wind tunnel. One stipulation was static testing, in which more than three times the flight load (or more than 3,000 pounds) was applied successfully. Another NASA requirement was propeller system testing, recently completed at Able Corp. in Yorba Linda, CA.

The replica has about \$100,000 worth of donated materials from companies such as Northrop Corp./Aircraft Division, Torrance, CA, which also provided the project a home base for 15 years; International Die Casting, Gardena, CA; McDonnell Douglas, Long Beach, CA; Rockwell International, Downey, CA; and TRW Redondo Beach, CA.

Upon completion of the wind tunnel tests, the replica will be transported to Los Angeles, where it will be put on permanent display in the lobby of the Federal Aviation Administration (FAA) Western Pacific Regional Office in Hawthorne, CA, to provide a valuable resource for the community and surrounding schools. The lobby will soon be renamed the "FAA Flight Deck" Museum and include a variety of other exhibits depicting the history of aviation.

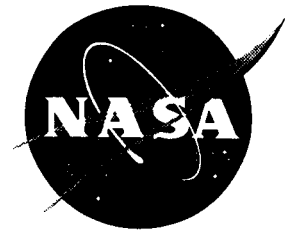
Using the wind tunnel test data, a second Wright Flyer will be built by the AIAA volunteers and flown on Dec. 17, 2003, commemorating the 100th anniversary flight of Orville and Wilbur Wright at Kitty Hawk, NC. During a recreation of the Wright brothers' first flight, the replica will fly low and travel at only 30 mph, the same speed flown by the Wright brothers, whose flight only traveled 120 feet during its 12 seconds in the air.

Fred Culick, 63, of Altadena, CA, a private pilot and an aeronautics professor at the California Institute of Technology, Pasadena, CA, will be the first to fly the airplane; he will control it while lying on his stomach.

Orville and Wilbur Wright were responsible for a host of aviation inventions, including wing warping, which provides lateral control and allows an airplane to bank left or right. They also invented the forward stabilizer, which controls the airplane's up and down movement, and the moveable rear rudder, which enables the pilot to counteract unwanted turns.

Further information about the Wright Flyer is available on the AIAA Wright Flyer homepage at: <http://www.alumni.caltech.edu/~johnlatz/1903.html>

Contract Announcement



National Aeronautics and
Space Administration

Washington, DC 20546
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Jennifer McCarter
Headquarters, Washington, DC
(Phone: 202/358-1639)

For Release
May 1, 1998

Jerry Berg
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0034)

RELEASE: C98-e

NASA AWARDS \$131 MILLION CONTRACT OPTION TO CSC TO CONTINUE INFORMATION SUPPORT SERVICES

NASA's Marshall Space Flight Center in Huntsville, AL, has exercised an option to continue an existing contract with Computer Sciences Corp. (CSC), Falls Church, VA, for the provision of a myriad of information services to Marshall and to NASA agencywide.

The priced option, valued at \$131,845,510, covers the period May 1, 1998, through April 30, 1999. It continues efforts under a contract titled Program Information Systems Mission Services (PrISMS), which was awarded to CSC in 1994.

Work performed by CSC and its subcontractors under PrISMS includes support to Marshall in the areas of computer systems, applications software, networks and telephone systems, data reduction and audio-video services.

It also includes a range of services in support of the entire agency, including management of several wide-area networks, agencywide information management systems, and the NASA Automated Data Processing Consolidation Center.

The option is the third of a possible six priced options. The PrISMS contract has an approximate total value, if all options are exercised, of \$1.053 billion.

- end -

NewsRelease

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For Release

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May 1, 1998

Tim Tyson
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0034)

RELEASE: 98-73

CITIES TEAM WITH NASA AND EPA FOR "URBAN FORESTS" STUDY

Three U.S. cities will partner with NASA and the Environmental Protection Agency (EPA) to study how strategically placed "urban forests" and the use of reflective surfaces may help cool cities, reduce pollution, lower energy bills, modify growth plans and help mitigate further deterioration of air quality.

Slated to participate in the study, scheduled for May and June, are Baton Rouge, LA; Sacramento, CA; and Salt Lake City, UT.

Researchers from NASA's Marshall Space Flight Center, Huntsville, AL, will study bubble-like accumulations of hot air, called urban heat islands, and how these change between day and night. Heat islands develop over cities as naturally vegetated surfaces are replaced with asphalt, concrete, rooftops and other man-made materials.

"The artificial materials store much of the Sun's energy and remain hot long after sunset," said the experiment's lead investigator, Dr. Jeff Luvall of the Global Hydrology and Climate Center at Marshall. "This produces a dome of elevated temperatures over a city, 5-10 degrees higher than air temperatures over adjacent rural areas," he explained.

"The more a city grows -- replacing trees and grass with buildings and roads -- the warmer it becomes, increasing peak electricity demands. To meet these demands, power plants must utilize fossil fuels to a greater extent, which ultimately has a negative impact on air quality," said Luvall.

To better understand which surfaces contribute or drive the development of heat islands, an aircraft equipped with thermal imaging equipment will fly over the three cities taking high resolution thermal measurements.

-more-

Researchers also will use thermal satellite imagery to map and measure "hot spots" and visible energy rising up into the lower atmosphere of the target cities.

Science team members will use the thermal imagery in meteorological and air quality models, allowing researchers to better understand how cities in different locations and with different land use characteristics impact local and regional climate.

Additionally, the EPA will use the satellite imagery to determine how urban heat islands contribute to the ground-level generation of ozone. Not to be confused with the ozone layer protecting Earth from ultraviolet rays, ground-level ozone is a powerful and dangerous respiratory irritant found in cities during the summer's hottest months.

In findings from similar studies in Huntsville and Atlanta, GA, researchers have learned that parks and other urban areas with trees and grass are cooler than parking lots and areas with a high concentration of buildings.

"These 'green areas' are cooler because they dissipate solar energy by using it to evaporate water from leaves, thereby cooling the air," said the experiment's co-investigator, Dr. Dale Quattrochi of the Global Hydrology and Climate Center.

Researchers believe that cities could be "cooled" by reintroducing vegetated areas, such as "urban forests," into the cities. Certain varieties of trees shade buildings, preventing solar heating, and are able to naturally cool a city as they release moisture into the air and provide shade over urban surfaces.

Another way to cool cities, the science team believes, is by using reflective surfaces, such as light-colored roofs, roads, and parking lots. Light-colored surfaces reflect rather than absorb heat.

The researchers want to demonstrate that by "cooling" a city, it is possible to directly reduce energy use by buildings, which in turn reduces greenhouse gas emissions and ultimately improves the air quality. Additionally, individuals, businesses and governments can save money by reducing the amount of energy consumed.

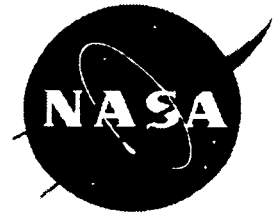
Based on the results of the project, the science team plans to disseminate its findings nationally so other cities also can incorporate what the team has learned into their long-range growth plans.

The study contributes to NASA's Earth Science enterprise. The enterprise is responsible for a long-term, coordinated research effort to study the total Earth system and the effects of natural and human-induced changes on the global environment. This project also is aimed at the enterprise's efforts to make the more near-term economic and societal benefits of Earth science research and data products available to the broader community of public and private users.

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For Release

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Headquarters, Washington, DC
(Phone: 202/358-1761)

May 1, 1998

RELEASE: 98-74

NASA AWARDS FIVE FIRMS THE GEORGE M. LOW AWARD

Five aerospace companies were awarded the space agency's highest honor today for excellence and quality. NASA Administrator Daniel S. Goldin presented the 1998 George M. Low Award to the companies at the thirteenth annual NASA Continual Improvement and Reinvention Conference on Quality Management in Alexandria, VA. The award, established in 1985, is NASA's highest quality and excellence award for contractors and subcontractors and the oldest award for organizational quality.

ILC Dover, Inc., Frederica, DE, received the award in the large business, product category; and Allied Signal Technical Services Corporation, Lanham, MD, and DynCorp, Johnson Support Division, Houston, TX, both received the award in the large business, service category. In the small business, product category BST Systems, Inc., Plainfield, CT, received the award; and Advanced Technology Company, Pasadena, CA, received the award in the small business, service category.

"These companies exemplify excellence and outstanding achievements that prove beneficial to NASA and the Nation's industry," said Goldin.

ILC Dover, Inc., specializes in developing high technology engineered softgoods. The company has a long record of outstanding performance in the development of EVA spacesuits. Its recent success came from the development and delivery of the Mars Pathfinder airbag landing system.

Allied Signal Technical Services Corporation demonstrated exemplary operational proficiency of over 99.996 percent from 1995 through 1997 with 99.94 percent systems reliability covering the same time frame.

"Each of these companies has definitely made a positive impact on NASA's performance goals," said Frederick D. Gregory, Associate Administrator for Safety and Mission Assurance at NASA Headquarters.

- more -

DynCorp, Johnson Support Division, provided and supported a variety of specialties and supports a wide array of aircraft equipment and systems. The success of NASA's astronaut training program and Shuttle mission support programs is directly related to the performance of this contractor.

BST achieves consistently outstanding performance in a field often characterized as "black magic" -- aerospace batteries. BST developed the battery for the Mars Pathfinder. The battery lasted more than three times the planned Mars surface-mission duration, 98 Martian days versus the required 30 days.

Advanced Technology Company is considered a world-class metal joining company, tackling jobs that most organizations consider impossible. The company has produced 20 imaging detectors that are operating error-free in space.

The conference featured NASA Administrator Goldin as well as keynote presentations by Peter B. Teets, President and Chief Operating Officer, Lockheed Martin Corporation; Allan R. Mulally, President, Information Space and Defense Systems, The Boeing Company; and David Crocker, President, Crocker Associates.

In addition to celebrating Low award winners, the conference is a forum to share best practices and lessons learned from quality management initiatives.

-end-

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For Release

Don Nolan-Proxmire
Headquarters, Washington, DC
(Phone: 202/358-1983)

May 4, 1998

NOTE TO EDITORS: N98-30

NASA TEMPER FOAM IS A SPINOFF SUCCESS

NASA Administrator Daniel S. Goldin will receive the one millionth pillow produced by Tempur-Pedic Inc. on Wednesday, May 6, at 5 pm EDT in the NASA Headquarters Auditorium, 300 E Street, SW, Washington, DC.

The pillow, made from a foam material developed by NASA researchers to cushion pilots against the rigors of test flight, will be presented by Tempur-Pedic's CEO, Robert Trussell. The Lexington, KY, company's pillows, mattresses and other products are used to treat disorders ranging from sleeplessness to pressure ulcers, commonly known as bedsores.

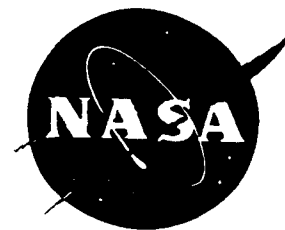
Temper Foam, a visco-elastic, body-temperature reactive material which returns to its original form even after compression, was first developed by NASA's Ames Research Center, Moffett Field, CA, for use in Space Shuttle seating and to protect airline passengers in crashes. The material was recently inducted into the United States Space Foundation's Space Technology Hall of Fame, Colorado Springs, CO.

-end-

News Release

National Aeronautics and
Space Administration

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For Release

Jennifer McCarter
Headquarters, Washington, DC
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May 5, 1998

NOTE TO EDITORS: N98-31

PREFLIGHT BRIEFINGS FOR FINAL SHUTTLE-MIR MISSION SET FOR MAY 11

A series of background press briefings on the STS-91 mission, the final Shuttle flight to dock with the Mir space station, will be held on Monday, May 11, at the Johnson Space Center, Houston, TX, beginning at 9 a.m. EDT.

The major objective of the mission is the return of Andy Thomas from four months of research on the Mir as the seventh and final U.S. astronaut to live and work on the Russian complex. Thomas' departure will mark the end of more than two years of a continuous U.S. presence in space.

The briefings will begin with an overview of the STS-91 mission followed at 10 a.m. with a briefing on the Shuttle-Mir Phase One program. After taking a break for the daily NASA Video File at noon, there will be a briefing on the cargo being carried in the Spacehab module at 12:30 p.m., followed by a briefing on the Alpha Magnetic Spectrometer (AMS) payload at 1 p.m. The STS-91 astronauts will hold their preflight press conference beginning at 2:30 p.m. All of the briefings will be carried live on NASA Television.

NASA Television is available through the GE-2 satellite, transponder 9C located at 85 degrees West longitude, vertical polarization, with a frequency of 3880 MHz, and audio at 6.8 MHz.

Following the astronauts' preflight news conference, individual round-robin interviews with the crew members will be held for reporters at Johnson. Media interested in round-robin interviews with the STS-91 astronauts must fax a letter of interest to reserve a slot in the round-robins to Eileen Hawley in the Johnson public affairs office by close of business on Friday, May 8. The fax number is 281/483-2000. The round-robin interviews will not be seen on NASA TV.

IMPORTANT NOTE: The STS-91 round-robins are **not** part of the International Space Station (ISS) media workshop which starts on Tuesday, May 12. Reporters attending the ISS workshop must issue a separate request if they wish to be included in the STS-91 round-robin interviews. Requests should be faxed to the Johnson newsroom at 281/483-2000.

-more-

STS-91 PREFLIGHT BRIEFINGS

Monday, May 11, 1998

(All times shown are EDT)

- 9 a.m. MISSION OVERVIEW**
Paul Dye, STS-91 Lead Flight Director
- 10 a.m. PHASE ONE OVERVIEW**
Frank Culbertson, Director, Shuttle-Mir Phase One Program
John Uri, Shuttle-Mir Mission Scientist
- Noon NASA VIDEO FILE**
- 12:30 p.m. SPACEHAB BRIEFING**
Mike Bain, Shuttle-Mir Program Manager, Spacehab
Carolyn Overmyer, SHUCS experiment
- 1 p.m. ALPHA MAGNETIC SPECTROMETER (AMS) BRIEFING**
Mark Sistilli, Program Manager, AMS, NASA
John O'Fallon, Director, High Energy Physics, Dept. of Energy
- 2:30 p.m. STS-91 CREW PRESS CONFERENCE**
Charles Precourt, Commander
Dominic Gorie, Pilot
Franklin Chang-Diaz, Mission Specialist-1, Payload Commander
Wendy Lawrence, Mission Specialist-2
Janet Kavandi, Mission Specialist-3
Valeri Ryumin, Mission Specialist-4

-end-

Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600



For Release
May 5, 1998

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

VIDEO ADVISORY: V98-47

SPACE AGE MATERIAL CREATES BEAUTY REST

Today's video file provides animation and b-roll of how a foam material developed by NASA researchers is now being used in pillows and mattresses by a Lexington, KY, company to treat disorders ranging from sleeplessness to the more severe illness of pressure ulcers, commonly known as bedsores.

ITEM 1: BEAUTY REST

Animation of foam material and mattresses.

ITEM 1a: MATTRESS MANUFACTURING

B-roll of the manufacturing process for Tempur-Pedic mattresses and pillows.

For more information contact Don Nolan-Proxmire at (202) 358-1983 .

ITEM 2: REPLAY - SOLID SMOKE

ITEM 3: REPLAY - SPACE SCIENCE STUDENT INVOLVEMENT PROGRAM (SSIP)

Video news file today at noon, 3, 6, 9 p.m. and midnight Eastern.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600



For Release

Donald Savage
Headquarters, Washington, DC
(Phone: 202/358-1547)

May 6, 1998
EMBARGOED UNTIL 2 P.M. EDT

Bill Steigerwald
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5017)

Robert Tindol
California Institute of Technology, Pasadena, CA
(Phone: 626/395-3631)

RELEASE: 98-75

MOST POWERFUL EXPLOSION SINCE THE BIG BANG CHALLENGES GAMMA RAY BURST THEORIES

A recently detected cosmic gamma ray burst released a hundred times more energy than previously theorized, making it the most powerful explosion since the creation of the universe in the Big Bang.

"For about one or two seconds, this burst was as luminous as all the rest of the entire universe," said Caltech professor George Djorgovski, one of the two principal investigators on the team from the California Institute of Technology, Pasadena, CA.

The team measured the distance to a faint galaxy from which the burst originated at about 12 billion light years from the Earth. The observed brightness of the burst despite this great distance implies an enormous energy release. The team's findings appear in the May 7 issue of the journal Nature.

The burst was detected on Dec. 14, 1997, by the Italian/Dutch BeppoSAX satellite and NASA's Compton Gamma Ray Observatory satellite. The Compton observatory provided detailed measurements of the total brightness of the burst, designated GRB 971214, while BeppoSAX provided its precise location, enabling follow-up observations with ground-based telescopes and NASA's Hubble Space Telescope.

"The energy released by this burst in its first few seconds staggers the imagination," said Caltech professor Shrinivas Kulkarni, the other principal investigator on the team.

- more -

The burst appears to have released several hundred times more energy than an exploding star, called a supernova, until now the most energetic known phenomenon in the universe. Finding such a large energy release over such a brief period of time is unprecedented in astronomy, except for the Big Bang itself.

"In a region about a hundred miles across, the burst created conditions like those in the early universe, about one millisecond (1/1,000 of a second) after the Big Bang," said Djorgovski.

This large amount of energy was a surprise to astronomers. "Most of the theoretical models proposed to explain these bursts cannot explain this much energy," said Kulkarni. "However, there are recent models, involving rotating black holes, which can work. On the other hand, this is such an extreme phenomenon that it is possible we are dealing with something completely unanticipated and even more exotic."

Gamma-ray bursts are mysterious flashes of high-energy radiation that appear from random directions in space and typically last a few seconds. They were first discovered by U.S. Air Force Vela satellites in the 1960s. Since then, numerous theories of their origin have been proposed, but the causes of gamma-ray bursts remain unknown. The Compton observatory has detected several thousand bursts so far.

The principal limitation in understanding the bursts was the difficulty in pinpointing their direction on the sky. Unlike visible light, gamma rays are exceedingly difficult to observe with a telescope, and the bursts' short duration exacerbates the problem. With BeppoSAX, scientists now have a tool to localize the bursts on the celestial sphere with sufficient precision to permit follow-up observations with the world's most powerful ground-based telescopes.

This breakthrough led to the discovery of long-lived "afterglows" of bursts in X-rays, visible and infrared light, and radio waves. While gamma-ray bursts last only a few seconds, their afterglows can be studied for several months. Study of the afterglows indicated that the bursts do not originate within our own galaxy, the Milky Way, but rather are associated with extremely distant galaxies.

Both BeppoSAX and NASA's Rossi X-ray Timing Explorer spacecraft detected an X-ray afterglow. BeppoSAX precision led to the detection of a visible light afterglow, found by a team from Columbia University, New York, NY, and Dartmouth College, Hanover, NH, including Professors Jules Halpern, David Helfand, John Torstensen, and their collaborators, using a 2.4-meter telescope at Kitt Peak, AZ, but no distance could be measured from these observations.

As the visible light from the burst afterglow faded, the Caltech team detected an extremely faint galaxy at its location, using one of the world's largest telescopes, the 10-meter Keck II telescope at Mauna Kea, Hawaii. The galaxy is about as faint as an ordinary 100 watt light bulb would be as seen from a distance of a million miles.

Subsequent images taken with the Hubble Space Telescope confirmed the association of the burst afterglow with this faint galaxy and provided a more detailed image of the host galaxy.

The Caltech team succeeded in measuring the distance to this galaxy, using the light-gathering power of the Keck II telescope. The galaxy is at a redshift of $z=3.4$, or about 12 billion light years distant (assuming the universe to be about 14 billion years old).

From the distance and the observed brightness of the burst, astronomers derived the amount of energy released in the flash. Although the burst lasted approximately 50 seconds, the energy released was hundreds of times larger than the energy given out in supernova explosions, and it is about equal to the amount of energy radiated by our entire Galaxy over a period of a couple of centuries. Scientists say it is possible that other forms of radiation from the burst, such as neutrinos or gravity waves, which are extremely difficult to detect, carried a hundred times more energy than that.

NASA is planning two missions to further investigate gamma-ray bursts: the High Energy Transient Experiment II (HETE II), scheduled to launch in the fall of 1999, and the Gamma Ray Large Area Space Telescope (GLAST), scheduled to launch in 2005. HETE II will be able to precisely locate gamma-ray bursts in near real-time and quickly transmit their locations to ground-based observatories, permitting rapid follow-up studies. GLAST will detect only those gamma-ray bursts that emit the highest energy gamma rays, and will be able to locate them with sufficient precision to permit coordinated observations from the ground. Because not much is known about the bursts at these high energies, the observations may permit researchers to choose among competing theories for the origin of gamma-ray bursts.

- end -

NOTE TO EDITORS: Images of the GRB 971214 field are available at:

[FTP://PAO.GSFC.NASA.GOV/newsmedia/GRB/](ftp://PAO.GSFC.NASA.GOV/newsmedia/GRB/)

Information on the BeppoSAX spacecraft is available at:

<http://www.sdc.asi.it/>

Information on the Compton Gamma Ray Observatory is available at:

<http://cossc.gsfc.nasa.gov/cossc/descriptions/cgro.html>

Information on Gamma Ray Bursts is available at:

<http://cossc.gsfc.nasa.gov/cossc/nasm/VU/overview/bursts/bursts.html>

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600



For Release

Don Nolan-Proxmire
Headquarters, Washington, DC
(Phone: 202/358-1983)

May 6, 1998

RELEASE: 98-77

TEST PILOTS TO TESTBEDS -- NASA CUSHIONS LIFTOFF AND EASES BEDSORES

A foam material developed by NASA researchers to cushion pilots against the rigors of test flight, and currently in use aboard the Space Shuttles, is now being successfully sold in pillows and mattresses by a Lexington, KY, company to treat disorders ranging from sleeplessness to the more severe illness of pressure ulcers, commonly known as bedsores.

Tempur-Pedic's products have been cited by the U.S. Department of Veterans Affairs as "very effective for the treatment and prevention" of bedsores and "very comfortable" to patients. Both the Veterans Affairs Department and the National Institutes of Health have purchased hundreds of Tempur-Pedic products for use in their pain management and ulcer treatment programs. Bedsores, which can be fatal if left untreated, cost the Medicare and Medicaid programs almost \$2 billion annually for treatment of wheelchair-bound, nursing home and hospital patients.

The one millionth pillow produced by the company, Tempur-Pedic, will be presented by its CEO, Robert Trussell, to NASA Administrator Daniel S. Goldin, on Wednesday, May 6, at 5 p.m. EDT in the NASA Headquarters Auditorium, 300 E Street, SW, Washington, DC.

Administrator Goldin said, "This NASA technology designed to protect astronauts and pilots is now being used to help the elderly, the disabled and hospital patients. NASA is deeply committed to transferring our unique knowledge to improve the quality of life for all Americans." Tempur-Pedic's Trussell added, "We have taken NASA's space-age material and developed it into 'body-friendly' bedding, which distributes pressure more evenly throughout the spine, joints and other parts of the body."

Tempur-Pedic's pillows, mattresses and other products made from Temper Foam have billions of self-ventilating memory molecules that slowly react to body heat and weight. It was first developed by NASA's Ames Research Center, Moffett Field, CA, for use in aircraft test-pilot seats and to protect airline passengers in crashes. Temper Foam was recently inducted into the United States Space Foundation's Space Technology Hall of Fame, Colorado Springs, CO.

- more -

- 2 -

NASA actively encourages commercialization of its technologies. To learn more about NASA innovations, commercialization efforts and the Agency's technology transfer programs, interested parties can call 1-800-678-6882 or access the NASA Commercial Technology Network web page at URL:

<http://nctn.hq.nasa.gov/>

Tempur-Pedic can be contacted by telephoning 1-800-886-6466 or at the web address:

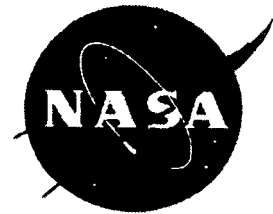
www.tempurpedic.com

-end-

NewsRelease

National Aeronautics and
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For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

May 7, 1998

Ray Villard
Space Telescope Science Institute, Baltimore, MD
(Phone: 410/338-4514)

NOTE TO EDITORS: N98-32

SPACE SCIENCE UPDATE TO SHOW HOW TO FEED A BLACK HOLE

New visible and infrared images of Centaurus A, the nearest active galaxy to Earth, are the focus of the next Space Science Update. These images, obtained by NASA's Hubble Space Telescope, are providing astronomers with unique insights about the supermassive black hole at the galaxy's center, which is actively "feeding" due to a recent galactic collision.

The press briefing will be held at 1 p.m. EDT on Thursday, May 14, at NASA Headquarters. Participants will include:

Dr. Ethan J. Schreier
Astronomer and associate director for operations,
Space Telescope Science Institute, Baltimore, MD

Dr. Alessandro Marconi
Astronomer, Astrophysical Observatory of Arcetri, Florence, Italy

Dr. Anne Kinney
Astronomer, Space Telescope Science Institute, Baltimore, MD

Dr. Bruce Margon
Astronomy professor and former chairman of the Astronomy Department,
University of Washington, Seattle, WA

Dr. Dave Leckrone
Senior project scientist, Hubble Space Telescope Project, NASA Goddard Space Flight
Center, Greenbelt, MD

-more-

-2-

The Space Science Update will originate from the NASA Headquarters Auditorium, 300 E St., S.W., Washington, DC. It will also be carried live on NASA TV with two-way question-and-answer capability for reporters covering the event from participating NASA centers, including the Johnson Space Center in Houston, site of the media workshop on the International Space Station.

NASA Television is broadcast on the GE-2 satellite, located on Transponder 9C, at 85 degrees West longitude, vertical polarization, frequency 3880.0 Mhz, audio 6.8 MHz. Live audio of the broadcast will be available on voice circuit at NASA's Kennedy Space Center, FL, on 407/867-1220.

-end-

Video Advisory

National Aeronautics and
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Washington, DC 20546
(202) 358-1600



For Release
May 7, 1998

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

VIDEO ADVISORY: V98-49

ASTRONAUT JOHN GLENN GREETES NASA ALUMNI

Today's video file provides footage of astronaut John Glenn addressing the NASA Alumni League.

ITEM 1: GLENN FOOTAGE

B-roll of Glenn's remarks.

For more information contact Ray Castillo at (202) 358-4555.

ITEM 2: REPLAY - IMAGES OF GAMMA-RAY BURST

Video news file today at noon, 3, 6, 9 p.m. and midnight Eastern.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

Video Advisory

National Aeronautics and
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Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

For Release
May 12, 1998

VIDEO ADVISORY: V98-50

NEW SATELLITE HELPS SCIENTISTS FORECAST WEATHER; INTERNATIONAL SPACE STATION COMPILATION

Today's video file provides animation and footage of the NOAA-K weather satellite which is scheduled for launch on May 13, at 11:52 a.m. EDT at Vandenberg Air Force Base, CA. Television coverage begins at 11 a.m. EDT. Also on NTV is a compilation of footage and animation of the International Space Station.

- ITEM 1: NOAA-K ORBIT ANIMATION**
- ITEM 1a: A CONCERT OF SATELLITES**
- ITEM 1b: NOAA-K SATELLITE ANIMATION**
- ITEM 1c: ANALYZING EL NINO**
- ITEM 1d: KEEPING AN EYE ON HURRICANES**
- ITEM 1e: TRACKING FIRES**
- ITEM 1f: FLORIDA THUNDER BUMPER**
- ITEM 1g: ICE FLOWS**
- ITEM 1h: SEARCH & RESCUE**
- ITEM 1i: NOAA-K PRE-LAUNCH PROCESSING AT VANDENBERG AIR FORCE BASE, CA**
- ITEM 1j: WEATHER FORECASTER B-ROLL**
- ITEM 1k: INTERVIEW - JOEL SUSSKIND, PROJECT SCIENTIST, GODDARD SPACE FLIGHT CENTER**
- ITEM 1l: INTERVIEW - JIM PURDOM, DIRECTOR, NOAA'S NESDIS OFFICE OF RESEARCH AND OPERATIONS**

For more information contact Dave Steitz at (202) 358-1730 or Allen Kenitzer at (301) 286-2806.

- ITEM 2: COMPILATION OF INTERNATIONAL SPACE STATION FOOTAGE**
Animation and b-roll of International Space Station.

For more information contact Michael Braukus at (202) 358-1979 or James Hartsfield at (281) 483-5111.

Video news file today at noon, 3, 6, 9 p.m. and midnight Eastern.

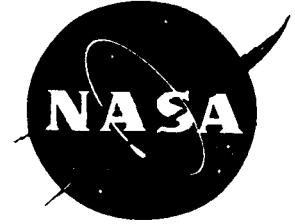
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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News Release

National Aeronautics and
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Washington, DC 20546
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For Release

Sonja Alexander
Headquarters, Washington, DC
(Phone: 202/358-1761)

May 12, 1998

RELEASE 98-80

NASA ADMINISTRATOR'S 1998-99 FELLOWS ANNOUNCED

The participants in the 1998-99 NASA Administrator's Fellowship Program were announced recently. The program aims to enhance the professional development of mid-career science, mathematics and engineering faculty at Historically Black Colleges and Universities, Hispanic-serving Institutions and Tribal Colleges and Institutions.

The program also provides an opportunity for NASA employees to teach and conduct research at minority colleges and universities. This helps the universities become better-qualified to assist NASA in its research and development mission.

The recipients are:

Waldo Rodriguez, Norfolk State University, Norfolk, VA
Sheila Nash-Stevenson, NASA Marshall Space Flight Center, Huntsville, AL
Felix Miranda, NASA Lewis Research Center, Cleveland, OH
Dexter Johnson, Lewis Research Center
Orlando Melendez, NASA Kennedy Space Center, FL
Diana Farrar, NASA Ames Research Center, Moffett Field, CA

The fellowship program is a two-part competitive program, with one fellowship being awarded this year to an individual from outside the Agency, and five to NASA employees. Dr. Waldo Rodriguez, the recipient from Norfolk State University, is a professor of chemistry in the School of Health Related Professions and Natural Sciences. He will conduct research at NASA's Langley Research Center in Hampton, VA.

The five NASA employees who were awarded fellowships will have the opportunity to serve as exchange teachers, scientists, engineers and/or managers at Alabama A&M University in Huntsville; the University of Puerto Rico at both Humacao and Mayaguez;

-more-

-2-

Florida A&M University in Tallahassee; and the Institute of American Indian Art in Santa Fe, NM, for a period of one to three academic semesters. They will share their knowledge of the Agency's scientific and technical programs and lend real-world experiences to the teaching and research process.

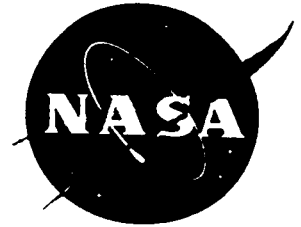
The program, scheduled to begin in August 1998 and run through May 2000, will be administered by the National Research Council. Information on the upcoming 1999-2001 competition can be obtained by contacting Lois Hobson in the Fellowship Office of the National Research Council, 2101 Constitution Ave., N.W., Washington, DC, 20418 (Phone: 202/ 334-2872). The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering and the Institute of Medicine. It is a private, non-profit institution that provides science and technology advice under a congressional charter.

-end-

News Release

National Aeronautics and
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For Release

Roderic Olvera Young
Headquarters, Washington, DC
(Phone: 202/358-4726)

May 13, 1998

RELEASE: 98-81

NASA AND YALE UNIVERSITY PUSH THE BARRIERS OF COMMUNICATIONS AND MEDICINE ON MT. EVEREST

As four climbers make their assault on Mt. Everest's summit this week, NASA and Yale University will be testing new health care devices based on space science technology. From the mountain's extreme environment, health data will travel from the base camp to the NASA-Yale telemedicine project. The problems of high altitude adaptation, physiological stress and the climbers' location represent great medical challenges similar to an astronaut's situation in space.

"In a few months we will begin assembly of the International Space Station with an eye toward further exploration of our solar system," said NASA Administrator Daniel S. Goldin. "To ensure a safe trip for our astronauts, we need the best computational, communication, engineering, and medical technology. At NASA, we are working on virtual environments for surgery, decision support systems and the most advanced medical monitoring techniques. Just think what this could mean for health care here on Earth. The NASA-Yale project is helping us achieve these goals. I wish our Mt. Everest pioneers great success as they help NASA climb the final frontier."

A team of Department of Defense and MIT personnel will be stationed at a base camp of 17,500 feet. The climbers ascending Mt. Everest will transmit data from sensors monitoring vital signs and location and, whenever possible, video of their progress. Yale personnel, supervised by Dr. Ronald C. Merrell, chairman, Yale Department of Surgery and director of the NASA-Yale project, will support medical consultation and monitor the health status of the climbers during their trek.

NASA and Yale have been working in partnership since July 1997, to contribute to the United States' competitive lead in commercial applications of telemedicine. The goal of the program is to develop and test next generation technologies. Tests on Mt. Everest

-more-

may lead to design improvements in future automated medical monitoring and care systems for astronauts who may be in space for months, not weeks.

Other NASA Telemedicine Activities

NASA's Lewis Research Center, Cleveland, OH, is providing the telecommunications bridge from Mt. Everest on its Advanced Communications Technology Satellite (ACTS). NASA also practices telemedicine on a daily basis in the human space flight program, currently comprising three areas: Space Shuttle, Shuttle/Mir and planning for and construction of the International Space Station.

Additional tests are already taking place at Yale through NASA's telemedicine connection with Moscow. Using the Internet, the "Spacebridge to Russia" has become a model for international telemedicine activities. The telemedicine network linking NASA's Johnson Space Center, Houston, TX, and Star City in Moscow supports NASA physicians caring for astronauts training in Russia. NASA demonstrations of telemedicine's potential on Earth have helped the rural Arizona Pagago Reservation and the Armenians after the earthquake of 1988.

NASA has been a pioneer in telemedicine since the beginning of human space flight. Using reliable, inexpensive communications NASA has brought expensive medical consultation within the reach of millions around the globe. For more information on NASA's Telemedicine program visit our website:

<http://www.hq.nasa.gov/office/olmsa/aeromed/telemed/>

NewsRelease

National Aeronautics and
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For Release

Sarah Keegan
Headquarters, Washington, DC
(Phone: 202/358-1600)

May 13, 1998

Ed Campion
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-82

JOHNSON BECOMES FIRST ISO 9001 CERTIFIED NASA FIELD CENTER

The Lyndon B. Johnson Space Center (JSC) has become the first NASA field center to earn ISO 9001 certification and one of the largest U.S. research and development organizations so honored.

National Quality Assurance (NQA) USA today presented the certificate of ISO 9001 registration to JSC Director George Abbey. The presentation followed a successful independent audit by NQA of the JSC Quality System in late February. The third-party auditors examined such areas as management commitment, design control, documentation, purchasing, test and inspection, and corrective action procedures. NQA found that JSC met or exceeded the stringent quality standards in all areas.

"This certification is a significant testimonial to the excellence of our quality system at JSC, and also serves as a starting point for continuing improvement of our overall technical and management processes," said Abbey.

ISO 9001 comprises the most detailed, comprehensive set of standard requirements for quality programs established by the International Standards Organization. To date, nearly 20,000 U.S. organizations have received ISO 9001 certification.

All NASA installations are required by NASA Administrator Daniel S. Goldin to be ISO 9001 registered by September 1999. NASA is the first federal agency to seek the quality certification as an entire agency.

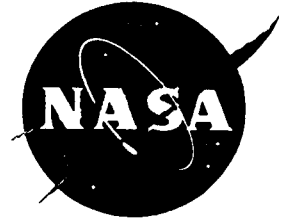
JSC's certification applies to all center human space flight responsibilities including program and project management, spacecraft engineering and design, flight crew training, space and life sciences research, and mission operations in support of NASA's Human Exploration and Development of Space enterprise.

- end -

Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600



Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

For Release
May 14, 1998

VIDEO ADVISORY: V98-51

HUBBLE SPACE TELESCOPE SHOWS HOW TO FEED A BLACK HOLE

Today's video file provides images showing a close-up of the fires off the coast of Mexico. NTV will broadcast a Space Science Update on black holes live at 1 p.m. EDT, originating from NASA Headquarters, Washington, DC. Animation and images of Centaurus A, the nearest active galaxy to Earth will be fed at approximately 12:55 p.m. EDT.

- ITEM 1: FEEDING A BLACK HOLE (ANIMATION)**
- ITEM 1a: CENTAURUS A : FEEDING A BLACK HOLE**
- ITEM 1b: SHAPING CENTAURUS A**
- ITEM 1c: ACTIVE GALAXY**
- ITEM 1d: CENTAURUS A NUCLEUS**
- ITEM 1e: NICMOS IMAGE OF CENTAURUS A**
- ITEM 1f: INTERVIEW - DR. ETHAN SCHREIER, ASTRONOMER AND
ASSOCIATE DIRECTOR FOR OPERATIONS, SPACE TELESCOPE
SCIENCE INSTITUTE**

For more information contact Doug Isbell at (202) 358-1547 or Ray Villard at (410) 338-4514.

ITEM 2: REPLAY - FIRES IN MEXICO

Video news file today at noon, 3, 6, 9 p.m. and midnight Eastern.

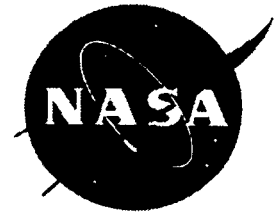
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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NewsRelease

National Aeronautics and
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For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1753)

May 14, 1998

Ray Villard
Space Telescope Science Institute, Baltimore, MD
(Phone: 410/338-4514)

RELEASE: 98-71

HUBBLE PROVIDES MULTIPLE VIEWS OF HOW TO FEED A BLACK HOLE

Astronomers have obtained an unprecedented look at the nearest example of galactic cannibalism -- a massive black hole hidden at the center of a nearby giant galaxy that is feeding on a smaller galaxy in a spectacular collision. Such fireworks were common in the early universe, as galaxies formed and evolved, but are rare today.

Although the cause-and-effect relationships are not yet clear, the views provided by complementary images from two instruments aboard NASA's Hubble Space Telescope are giving astronomers new insights into the powerful forces being exerted in this complex maelstrom. Researchers believe these forces may even have shifted the axis of the massive black hole from its expected orientation.

The Hubble wide-field camera visible image of the merged Centaurus A galaxy, also called NGC 5128, shows in sharp clarity a dramatic dark lane of dust girdling the galaxy. Blue clusters of newborn stars are clearly resolved, and silhouettes of dust filaments are interspersed with blazing orange-glowing gas. Located only 10 million light-years away, this peculiar-looking galaxy contains the closest active galactic nucleus to Earth and has long been considered an example of an elliptical galaxy disrupted by a recent collision with a smaller companion spiral galaxy.

Using the infrared vision of Hubble, astronomers have penetrated this wall of dust for the first time to see a twisted disk of hot gas swept up in the black hole's gravitational whirlpool. The suspected black hole is so dense it contains the mass of perhaps a billion stars, compacted into a small region of space not much larger than our Solar System.

-more-

Resolving features as small as seven light-years across, Hubble has shown astronomers that the hot gas disk is tilted in a different direction from the black hole's axis -- like a wobbly wheel around an axle. The black hole's axis is identified by the orientation of a high-speed jet of material, glowing in X-rays and radio frequencies, blasted from the black hole at 1/100th the speed of light.

This gas disk presumably fueling the black hole may have formed so recently it is not yet aligned to the black hole's spin axis, or it may simply be influenced more by the galaxy's gravitational tug than by the black hole's.

"This black hole is doing its own thing. Aside from receiving fresh fuel from a devoured galaxy, it may be oblivious to the rest of the galaxy and the collision," said Ethan Schreier of the Space Telescope Science Institute, Baltimore, MD. Schreier and an international team of co-investigators used Hubble's Near Infrared Camera and Multi-Object Spectrometer to probe deeper into the galaxy's mysterious heart than anyone has before.

The hot gas disk viewed by Hubble investigators is perpendicular to the galaxy's outer dust belt, while the black hole's own internal accretion disk of superhot gas falling into it is tilted approximately diagonally to these axes.

"We have found a complicated situation of a disk within a disk within a disk, all pointing in different directions," Schreier said. It is not clear if the black hole was always present in the host galaxy or belonged to the spiral galaxy that fell into the core, or if it is the product of the merger of a pair of smaller black holes that lived in the two once-separate galaxies.

Having an active galaxy just 10 million light-years away from Earth rather than hundreds of millions or billions of light-years distant offers astronomers a unique laboratory for understanding the elusive details of the behavior of supermassive black holes as fueled by galaxy collisions.

"Though Hubble has seen hot gas disks around black holes in other galaxies, the infrared camera has for the first time allowed us to peer at this relatively nearby, very active, but obscured black hole region," Schreier added.

The team of astronomers is awaiting further Hubble data to continue its study of the disk, as well as ground-based spectroscopic observations to measure the velocity of entrapped material around the black hole. This will allow the astronomers to better calculate the black hole's mass. The current results are scheduled to appear in the June 1, 1998 issue of *Astrophysical Journal Letters*.

- end -

EDITORS NOTE: Images and further information related to these results are available on the Internet at the following URLs: <http://oposite.stsci.edu/1998/14>
<http://oposite.stsci.edu/pubinfo/latest.html> or
<http://oposite.stsci.edu/pubinfo/pictures.html>

Images to accompany this release are available to news media representatives by calling the Headquarters Imaging Branch on 202/358-1900. NASA photo numbers are:

<u>Color</u>	<u>B&W</u>
98-HC-176	98-H-176
98-HC-177	98-H-177

NewsRelease

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Space Administration

Washington, D.C. 20546
(202) 358-1600



For Release

Renee N. Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

May 19, 1998

NOTE TO EDITORS: N98-34

NASA EMBRACES SPACE DAY '98

NASA Administrator Daniel S. Goldin will "chat" with students around the world on May 21 between 10 a.m. and 10:30 a.m. EDT via the Internet, as part of this year's Space Day celebration.

Cyber Space Day, an interactive webcast devoted to space, will broadcast from the Mall in Washington, DC, from 10 a.m. to 6 p.m. EDT. The webcast will allow students to conduct live interviews with prominent figures from the public and private sectors who have made significant contributions to space exploration. Other "chat" participants include: Senator John Glenn; Barbara Morgan, astronaut candidate/education mission specialist; David Levy, amateur astronomer, author and comet discoverer; and Dr. Mae Jemison, former astronaut and college professor.

"I am pleased to see Space Day focus on education and embrace children as well as their parents and teachers," said Administrator Goldin. "NASA appreciates the role Space Day plays in helping to communicate the importance of science, mathematics and technology education. These efforts help lay the foundation for inspiring the children of the world to reach for the stars."

Space Day is sponsored by the National Advisory Board co-chaired by Sen. Glenn and Norman Augustine, Chairman of the Board of Lockheed Martin, to stimulate interest in science, math and technology education through the excitement of space exploration. NASA along with more than 34 partner organizations in the educational, scientific, public and private sectors have joined to celebrate this national event.

The global celebration of Space Day '98 will kick off at 9 a.m. EDT. In recognition of Space Day, NASA Centers around the country will host the following events:

NASA Headquarters, Washington, DC - May 21st -- Senator John Glenn, Payload Specialist, STS-95, will serve as featured speaker at the NASA Research and

-more-

Human Health Symposium at George Washington University in the Dorothy Betts Marvin Theatre from 2 p.m. - 5 p.m. For more information please visit: <http://www.gwu.edu/~spi>

Ames Research Center, Moffet Field, CA - May 21st -- 1,250 elementary school students and their teachers will participate in over twenty-five activities about the Moon and space exploration. Students will build a Lunar Prospector model, participate in a mission simulation, make their own craters, construct a lunar habitat, and meet astronauts. Additional information on this event can be found at: <http://lunar.arc.nasa.gov>

Jet Propulsion Laboratory, Pasadena, CA - May 20-21st -- "A Day on Europa" will take place on May 20-21, since daylight on Europa lasts about two Earth days. Scheduled activities in numerous American cities will be transformed into global village events via the Internet. Highlights will include new imagery of Europa taken by the Galileo spacecraft and a free panel discussion entitled "Europa - Another Water World?" For more information go to: <http://www.caltech.edu/~tickets/to.htm> For other A Day on Europa events and activities go to: <http://www.jpl.nasa.gov>

Kennedy Space Center, Cocoa Beach, FL - May 22-25 -- From May 22-25, the Visitor Complex will host Discover Magazine, Star Trek, Fox 35 Kids and Cool 105.9 Day. These events will feature exhibits and appearances by former astronauts including Capt. Alan Bean, Dr. Ed Gibson, Col. Mike Mullane, Col. Buzz Aldrin, Capt. Gene Cernan, Cdr. Scott Carpenter, Capt. Wally Schirra, and Dr. Story Musgrave; as well as special character appearances; a scavenger hunt; and promotional giveaways. For more information please call 407/449-4254.

Goddard Space Flight Center, Greenbelt, MD - May 21 -- More than 100 fourth grade students will participate in variety of activities which include: Space Bingo; Send Your Name to Mars; Planet Garden; How to Calculate Your Age and Weight on Another Planet; Exploring Earth From Space; Cyber Space Day; 101 Reasons to Explore Space; and tours. For more details call 301/286-7031.

Johnson Space Center, Houston, TX - May 20 -- In anticipation of Space Day, the Challenger Center for Space Science Education will take fourth through eighth grade students on a special electronic field trip (EFT) that celebrates the human spirit of exploration. The event, will be broadcast via satellite, brings youngsters behind the scenes to witness first-hand how robotic, human and ground-based missions are used to unveil the mysteries of our universe.

More information on Space Day '98 activities can be found at the following URL:

www.spaceday.com

Video Advisory

National Aeronautics and
Space Administration

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(Phone: 202/358-1712)

For Release
May 19, 1998

VIDEO ADVISORY: V98-52

"PEEK-A-BOO" STORMS: FIRST RESULTS FROM TRMM

Today's video file provides the first images from the Tropical Rainfall Measuring Mission (TRMM) satellite. The images highlight TRMM's ability to peer into the inner structure of storms and its ability to more precisely measure tropical precipitation. TRMM is a joint mission between NASA and the Japanese Space Agency, NASDA.

- ITEM 1: CYCLONE SUSAN TRMM FLYOVER
- ITEM 1a: SLICE THROUGH CYCLONE SUSAN
- ITEM 1b: HOUSTON STORM TRMM FLYOVER
- ITEM 1c: SLICE THROUGH HOUSTON STORM
- ITEM 1d: TROPICAL RAINFALL (1/97 - 5/98)
- ITEM 1e: GLOBAL LIGHTNING EVENTS WITHIN TRMM'S
GROUND TRACK (40N-40S)
- ITEM 1f: NORTH AMERICA LIGHTNING EVENTS WITHIN TRMM'S
GROUND TRACK (40N-40S)
- ITEM 1g: REGIONAL (NORTH/SOUTH AMERICA) LIGHTNING EVENTS WITHIN
TRMM'S GROUND TRACK (40N-40S)
- ITEM 1h: AFRICAN LIGHTNING EVENTS WITHIN TRMM'S
GROUND TRACK (40N-40S)
- ITEM 1i: GLOBAL LIGHTNING WRAP
- ITEM 1j: TRMM ANIMATION
- ITEM 1k: WATER CYCLE
- ITEM 1l: ANATOMY OF A STORM
- ITEM 1m: INTERVIEW - ERIC SMITH, PROFESSOR OF
METEOROLOGY, FLORIDA STATE UNIVERSITY
- ITEM 1n: INTERVIEW - PROFESSOR EARLE WILLIAMS,
DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING, MIT
- ITEM 1o: INTERVIEW - PROFESSOR CAROL ANN CLAYSON,
DEPARTMENT OF EARTH & ATMOSPHERIC SCIENCES,
PURDUE UNIVERSITY

For more information contact David Steitz at (202) 358-1730 or Lynn Chandler at (301) 286-9016.

Video news file today at noon, 3, 6, 9 p.m. and midnight Eastern.

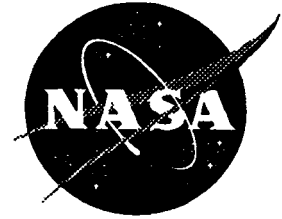
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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Video Advisory

National Aeronautics and
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For Release
May 20, 1998

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Headquarters, Washington, DC
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VIDEO ADVISORY: V98-53

MAGNETAR, MASTER OF THE UNIVERSE; SAFER AIR TRAVEL WITH WEATHER FORECASTING IN THE COCKPIT

Today on NTV is animation that shows a neutron star, 40,000 light years away, that is generating the strongest magnetic field yet found in the Universe. Also on NTV is animation of a state-of-the art weather technology system called Aviation Weather Information (AWIN). Having this system in the cockpit could lead to safer flying of airliners and smaller aircraft.

ITEM 1: EXISTENCE OF MAGNATARS - ANIMATION

ITEM 1a: INTERVIEW - CHRYSSA KOUVELIOTOU

For more information call Doug Isbell at (202) 358-1753 or Tim Tyson at (256) 544-0034.

ITEM 2: AVIATION WEATHER INFORMATION - ANIMATION

Also includes b-roll of commercial airplanes.

ITEM 2a: INTERVIEW - CHARLES SCANLON, SENIOR ENGINEER

ITEM 2b: INTERVIEW - DAVE WITCHEY, AIRLINE PILOT

For more information contact Dwayne Brown at (202) 358-1726 or Kathy Barnstorff at (757) 864-9886.

ITEM 3: REPLAY - TRIMM PACKAGE

ITEM 4: REPLAY - X-33 THERMAL PROTECTION SYSTEM

B-roll shows the system being tested on an F-15B; interviews included.

For more information contact Fred Brown at (805) 258-2663.

Video news file today at noon, 3, 6, 9 p.m. and midnight Eastern.

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-end-

News Release



National Aeronautics and
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Washington, DC 20546
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For Release

May 20, 1998

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Joel Wells
Kennedy Space Center, FL
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Ed Campion
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-85

DISCOVERY LAUNCH TO MIR ON MISSION STS-91 SET FOR JUNE 2

Space Shuttle managers selected June 2 as the official date for the launch of Shuttle Discovery on the ninth planned docking mission with the Russian Space Station Mir.

The flight, designated STS-91, will deliver logistics and supplies to Mir and bring home NASA Astronaut Andrew Thomas, the seventh and final NASA astronaut to serve as a Mir crew member. Thomas has been on the orbiting station since late January.

Discovery will launch from Kennedy Space Center Launch Complex 39A. The current launch time of 6:10 p.m. EDT may vary slightly because of calculations of Mir's precise location in space at the time of lift-off due to Shuttle rendezvous phasing requirements. The STS-91 mission is scheduled to last 9 days, 19 hours, 53 minutes. An on-time launch and nominal mission duration would have Discovery landing back at Kennedy on June 12 at 2:03 p.m. EDT

"The nine joint Shuttle-Mir docking missions and the seven astronauts who served as station crew members have provided us with a wealth of insight and experience to be used as we begin construction of the International Space Station later this year," said George Abbey, Director of the Johnson Space Center, who chaired the review.

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The launch team is evaluating a minor overboard water leak from the fuel cell No. 3 relief valve to determine its acceptability for flight. The leak was first seen during Monday's super lightweight tank test when the fuel cell was brought on line to support tanking test operations.

The launch date decision follows completion of the Flight Readiness Review at Kennedy by Shuttle managers from NASA and prime contractor United Space Alliance. STS-91 will be Discovery's 24th mission into space and the 91st Space Shuttle flight in the program's history.

-end-

News Release



National Aeronautics and
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Dwayne Brown
Headquarters, Washington, DC
(Phone: 202/358-1726)

May 20, 1998 ^{For Release}

Kathy Barnstorff
Langley Research Center, Hampton, VA
(Phone: 757/864-9886)

RELEASE 98-86

NASA SELECTS TEAMS FOR RESEARCH AGREEMENTS -- A "WEATHER CHANNEL" IN EVERY COCKPIT?

Airlines and smaller airplanes are one step closer to having up-to-the-minute, graphical weather displays in their cockpits, thanks in part to a new NASA aviation safety initiative.

NASA has selected research proposals from eight industry teams to develop Aviation Weather Information (AWIN) systems for commercial airliners and general aviation aircraft.

"Pilots tell us their number one priority is graphical weather information. We want to make it as easy to get a weather channel in the cockpit as it is in your living room. Technologies already exist that could help make that happen," said Michael Lewis, Director, NASA Aviation Safety Program (AvSP), based at the Langley Research Center in Hampton, VA.

AvSP is a partnership with the Federal Aviation Administration (FAA), the aviation industry (manufacturers and operators) and the Department of Defense (DOD). This partnership supports the national goal announced by President Clinton last year to reduce the fatal aircraft accident rate by 80 percent in 10 years and by 90 percent over two decades.

The weather information selections are one of NASA's new investments in that ambitious challenge. NASA asked U.S. companies to submit proposals for research, development, prototyping and implementation of AWIN systems and components. Industry teams submitted more than 40 proposals in three weather information categories: a national and worldwide system, a general aviation system and topical areas or specific components. NASA, FAA and DOD researchers evaluated the proposals based on technical merit, cost and feasibility.

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NASA has set aside more than \$8 million that will be matched by industry to fund AWIN projects over the next eighteen months. More money is expected to be designated later to accelerate commercialization and make some systems available within five years.

For the first phase of the program, teams led by Honeywell and Boeing/McDonnell Douglas Corp. will receive up to \$2.4 million apiece to develop a national and worldwide AWIN solution. Over the same 18-month period, the NavRadio group will be awarded up to \$1.2 million and the ARNAV team, up to \$400,000, for a general aviation weather information system. Other teams led by Rockwell International, Honeywell and NavRadio will split \$1.6 million to develop specific components for AWIN.

NASA envisions a futuristic system that would allow aircraft to be both a source and user of weather information. Airborne sensors would provide data for weather systems on board the plane, on the ground and in other aircraft. In the cockpit would be easy-to-read, real-time displays that can show weather across the country, not just a limited number of miles ahead. That way pilots could more easily monitor possible trouble spots and make better, more cost-efficient routing decisions.

That weather information would get to and from aircraft by satellite and ground transceivers using broadcast datalink and two way communications systems. Many industry teams also propose to incorporate decision aids into their AWIN designs. Those could include, among other tools, alarm systems or displays of suggested routes to help pilots better avoid potentially hazardous weather situations.

The aviation safety initiative was created in the summer of 1997 by NASA Administrator Daniel S. Goldin in response to a report from the White House Commission on Aviation Safety and Security, chaired by Vice President Al Gore. NASA has designated about \$500 million over five years for aviation safety, with more funding expected to follow.

Researchers at four NASA field installations are working with the FAA and industry to develop affordable, implementable technologies to make flying safer: Langley; Ames Research Center in Moffett Field, CA; Dryden Flight Research Center in Edwards, CA; and Lewis Research Center in Cleveland, OH.

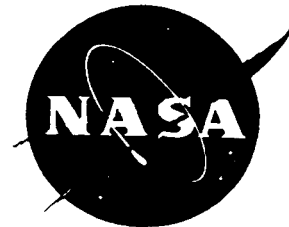
Because of advances in the last 40 years commercial airliners are already the safest of all major modes of transportation. But with an accident rate that has remained relatively constant in the last decade and air traffic expected to triple over the next 20 years, the U.S. government wants to prevent a projected rise in the number of aircraft accidents.

For more information on the NASA Aviation Safety Program please check the Internet at: www.hq.nasa.gov/office/aero/oastthp/programs/avsaf/avsafpro.htm

For a list of AWIN industry teams, please see:

http://oea.larc.nasa.gov/news_rels/1998/May98/98_23.html

News Release



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For Release

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May 20, 1998

Tim Tyson
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0034)

RELEASE: 98-87

STRONGEST STELLAR MAGNETIC FIELD YET OBSERVED CONFIRMS EXISTENCE OF MAGNETARS

A neutron star, located 40,000 light years from Earth, is generating the most intense magnetic field yet observed in the Universe, according to an international team of astronomers led by scientists at NASA's Marshall Space Flight Center in Huntsville, AL.

The discovery confirms the existence of a special class of neutron stars dubbed "magnetars." Magnetars have a magnetic field estimated to be one thousand trillion times the strength of Earth's magnetic field. A neutron star is a burned-out star roughly equal in mass to the Sun that has collapsed through gravitational forces to be only about 10 miles across. Magnetars have a magnetic field that is about 100 times stronger than the typical neutron star.

The discovery, to be published in the May 21 issue of the journal *Nature*, was made by a team of astronomers at the Marshall Space Flight Center led by Dr. Chryssa Kouveliotou of the Universities Space Research Association, working with Dr. Stefan Dieters of the University of Alabama in Huntsville (UAH), Professor Jan van Paradijs of UAH and the University of Amsterdam, and Dr. Tod Strohmayer of NASA's Goddard Space Flight Center in Greenbelt, MD.

"This finding should help us better calculate the rate at which stars die and create the heavier elements that later become planets and other stars," Kouveliotou said.

Kouveliotou and her team determined the strength of the magnetic field by combining data gathered by NASA's Rossi X-Ray Timing Explorer satellite with data from

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the Advanced Satellite for Cosmology and Astrophysics, a collaborative mission between Japan and the United States.

"The magnetic field generated by this star is truly incredible," Kouveliotou said. "It is so intense that it heats the surface to 18 million degrees Fahrenheit. Periodically, the field drifts through the crust of the neutron star, exerting such colossal forces that it causes a 'starquake.' The 'starquake' energy is then released as an intense burst of low-energy gamma rays."

Since these bursts happen quite often and the bulk of their energy is in low-energy (soft) gamma rays, the objects associated with them had been named Soft Gamma Repeaters. When bursting, Soft Gamma Repeaters are among the brightest objects in the sky, giving off as much energy in a single second as the Sun does in an entire year. The magnetar in question, called SGR 1806-20 by astronomers, was first discovered when it emitted soft gamma ray bursts.

Astronomers have debated the origin of Soft Gamma Repeaters since they were first observed in 1979. With this discovery, however, researchers believe the origin of Soft Gamma Repeaters lies in the 'starquake' phenomena of magnetars. The magnetar theory was first proposed in 1992 by astrophysicists Dr. Robert Duncan of the University of Texas at Austin and Dr. Christopher Thompson of the University of North Carolina at Chapel Hill.

Astronomers believe that at least 10 percent of neutron stars are born with magnetic fields that are strong enough to be considered magnetars. Neutron stars are created in supernovae explosions and they spin rapidly, at rates up to hundreds of revolutions per second.

The magnetar SGR 1806-20 is observed to be spinning once every 7.5 seconds and is slowing down roughly three milliseconds per year. Superstrong magnetic fields cause a neutron star to 'brake' and 'cool down,' making it practically impossible to observe them in radio waves or X-rays. This means there could be thousands or even millions of these dark relics scattered throughout our Milky Way galaxy. This could account for the large number of observed supernovae remnants without detectable neutron stars at their centers.

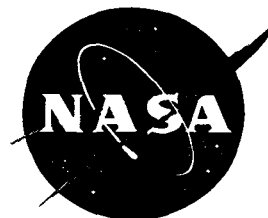
For more information on magnetars and this discovery, visit NASA Marshall's Space Sciences Laboratory website at:

<http://science.msfc.nasa.gov>

Video Advisory

National Aeronautics and
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For Release
May 22, 1998

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Headquarters, Washington, DC
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VIDEO ADVISORY: V98-55

FIRES IN MEXICO AS SEEN FROM MIR; INTERNATIONAL SPACE STATION COMPILATION

Today's video file provides footage of the fires off the coast of Mexico taken by astronaut Andy Thomas from the Mir Space Station. Also on NTV is a compilation of footage and animation of International Space Station.

ITEM 1: VIEWS OF FIRES IN MEXICO FROM MIR

B-roll of fires.

For more information contact Rob Navias at (281) 483-5111.

ITEM 2: COMPILATION OF INTERNATIONAL SPACE STATION FOOTAGE

Animation and b-roll of International Space Station.

For more information contact Michael Braukus at (202) 358-1979 or James Hartsfield at (281) 483-5111.

ITEM 3: REPLAY - ICY WATER WORLD

ITEM 3a: REPLAY - CRATER MANNANN'AN ON EUROPA

Video news file today at noon, 3, 6, 9 p.m. and midnight Eastern.

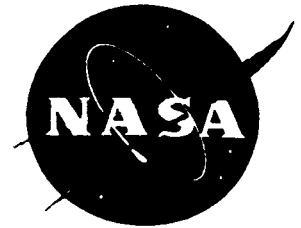
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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News Release

National Aeronautics and
Space Administration

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Michael Braukus
Headquarters, Washington, DC
(Phone: 202/358-1979)

For Release

June 3, 1998

Steve Roy
Marshall Space Flight Center, Huntsville, AL
(Phone: 205/544-0034)

RELEASE: 98-95

SPACE GROWN INSULIN CRYSTALS PROVIDE NEW DATA ON DIABETES

Diabetic patients may someday reduce their insulin injections and lead more normal lives because of new insights gained through innovative space research in which the largest insulin crystals ever studied were grown on the Space Shuttle.

Results from a 1994 insulin crystal growth experiment in space are leading to a new understanding of diabetes -- a hormone deficiency disease. This has the potential to significantly reduce expensive treatments, since treatment of diabetes accounts for one-seventh of the nation's health care costs. Sixteen million Americans suffer from hormone deficiency diseases such as diabetes, hepatic failure, hemophilia, Parkinson's and Huntington diseases.

"The space-grown insulin crystals have provided us new, never-before-seen information," said Dr. G. David Smith, scientist at Hauptman-Woodward Medical Research Institute, Buffalo, NY. "As a result, we now have a much more detailed picture of insulin," Smith said.

Because of the increase in crystal size, Smith's team is able to study in more detail the delicate balance of the insulin molecule. Natural insulin molecules hold together and gradually release into the human body. With some of the new and unexpected findings, researchers may be able to improve how insulin is released from its inactive-stored state to its active state. This could greatly improve the quality-of-life of people on insulin therapy by cutting down on the number of injections they have to take.

"This new information can be used in the development of a new therapeutic insulin treatment for the control of diabetes," said Smith.

Hauptman-Woodward is partnering with the Center for Macromolecular Crystallography, a NASA Commercial Space Center in Birmingham, AL.

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"We are doing crystal growth experiments in the near-weightlessness of space that really tell the story of how insulin works and give us clues of how, in the long run, to defeat diabetes," said Dr. Marianna M. Long, associate director of the center located at the University of Alabama at Birmingham.

Insulin is one of the most important hormones in the human body because it regulates the body's blood sugar levels. In people with diabetes, insulin is not produced in sufficient quantity, nor regulated properly. This metabolism disorder impairs the body's ability to use digested food for growth and energy.

Like many chemicals in the body, the three-dimensional structure of insulin is extremely complex. The intricate, blueprint-like arrangement of atoms within the insulin molecule determines how well the hormone interacts within the body. When grown on the ground, insulin crystals do not grow as large or as ordered as researchers desire -- obscuring the blueprint of the insulin molecules.

The center in Birmingham is one of NASA's 10 Commercial Space Centers managed by the Space Product Development Office within the Microgravity Research Program Office at NASA's Marshall Space Flight Center in Huntsville, AL. Each center represents a NASA partnership with industry and academia, pursuing product-oriented research in areas such as biotechnology, agriculture and materials. Unique research opportunities of the space environment are made available to encourage private industries to exploit the benefits of space-based research to develop new products or services.

NASA research has furthered the understanding of many diseases, including AIDS, heart disease, cancer, respiratory syncytial virus, sickle cell anemia, hepatitis and rheumatoid arthritis.

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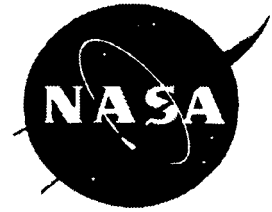
Note to Editors: Interviews with NASA, industry and university researchers are available via telephone, NASA TV live satellite link or e-mail. Please contact NASA representative Steve Roy at the Marshall Media Relations Office at 256/544-6535.

More information about NASA Space Products Development Office is available on the World Wide Web at: <http://microgravity.msfc.nasa.gov/MICROGRAVITY/SPD.html>

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
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For Release

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

June 8, 1998

MEDIA ADVISORY

NASA TECHNOLOGY TO BE EXHIBITED ON CAPITOL HILL JUNE 10

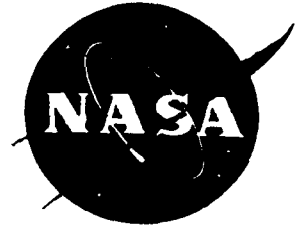
NASA will be displaying cutting edge aerospace technologies at the House Rayburn Office Building foyer from 10 a.m. to 3 p.m. on Wednesday, June 10. The NASA exhibits are being displayed at the invitation of Congressman Dana Rohrabacher, (R-CA), Chairman, Subcommittee on Space and Aeronautics, Committee on Science.

Exhibits from each of NASA's four strategic enterprises will be on hand, including a working model of the Mars Pathfinder Rover, Sojourner; technologies being developed for a NASA mission to an asteroid; information on the International Space Station; global climate prediction technologies used to monitor such weather events as El Nino, and advanced NASA research in aeronautics to make air travel safer and more economical.

NASA scientists, engineers and an astronaut will be present to answer any questions media and the public may have concerning NASA's commitment to maintaining America's leadership in research and technology development.

-end-

News Release



National Aeronautics and
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For Release

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June 4, 1998

Mark Hess
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-8982)

Ray Villard/Cheryl Gundy
Space Telescope Science Institute, Baltimore, MD
(Phone: 410/338-4514)

NOTE TO EDITORS: N98-39

FUTURE OF SPACE TELESCOPE SCIENCE INSTITUTE TO BE ANNOUNCED AT PRESS BRIEFING JUNE 8

NASA Administrator Daniel S. Goldin and Maryland Senator Barbara Mikulski will make an announcement on the future of the Space Telescope Science Institute (STScI) in Baltimore at a press conference on Monday, June 8, at the Institute.

The press conference will begin at 10 a.m. EDT in the STScI auditorium (Steven Muller Bldg.), 3700 San Martin Dr., on the Johns Hopkins University Homewood Campus, Baltimore.

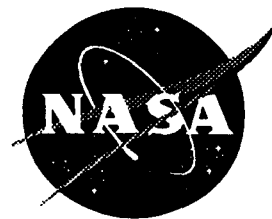
Media representatives planning to attend should call Cheryl Gundy at 410/338-4707 by 5 p.m. Friday, June 5, to be registered for press credentials.

-end-

Video Advisory

National Aeronautics and
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For Release
June 4, 1998

Debbie Rivera
Headquarters, Washington, DC
(Phone: 202/358-1743)

VIDEO ADVISORY: V98-61

TWO COMETS GIVE THE SUN A ONE-TWO PUNCH -- AND LOSE

Today's video file shows images of two comets plunging into the Sun's atmosphere, in unusually close succession, on June 1 and 2. The images, plus a dramatic ejection from the Sun, were observed by the Large-Angle Spectrometric Coronagraph on the Solar and Heliospheric Observatory (SOHO). SOHO is a joint undertaking of NASA and the European Space Agency.

ITEM 1: COMET DEATH RACE

Two comets pass within 30,000 miles of the solar surface and through the solar atmosphere, or corona.

ITEM 1a: COMET DEATH RACE (ANOTHER VIEW)

Same phenomenon as seen by SOHO's Extreme Ultraviolet Imaging Telescope.

ITEM 1b: SUN-GRAZING COMETS

File footage of previous comets.

ITEM 1c: SOHO ANIMATION

For more information contact Doug Isbell at (202) 358-1753 or Wade Sisler at (301) 286-6256.

Video news file today at 11 a.m. and 3:55 p.m. Eastern.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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For Release

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June 8, 1998

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Ray Villard
Space Telescope Science Institute, Baltimore, MD
(Phone: 410/338-4514)

RELEASE: 98-96

NASA SELECTS HOME FOR NEXT GENERATION SPACE TELESCOPE

The duties of the Space Telescope Science Institute in Baltimore, MD, will be expanded to include the management of science operations for the Next Generation Space Telescope (NGST), NASA officials announced today.

The Space Telescope Science Institute, located at the Johns Hopkins University, has been operating the science program for the Hubble Space Telescope since 1983.

"We looked through a microscope to decide who would operate the Next Generation Space Telescope," said NASA Administrator Daniel S. Goldin. "NASA and the scientific community had to determine who had the right facilities, who had the right experience, who was the best. The clear choice was Baltimore's Space Telescope Science Institute."

"The Space Telescope Science Institute has greatly served the interests of the global astronomical community, while producing a steady stream of impressive new discoveries," added Dr. Wesley T. Huntress, Jr., Associate Administrator for NASA's Office of Space Science, Washington, DC. "With its selection as the Next Generation Space Telescope Science Institute, we can now count on at least a seven-year continuation of their outstanding efforts, rather than closing the doors to the facility after the Hubble mission ends in 2010."

The NGST is one of the cornerstone missions of the Astronomical Search for Origins and Planetary Systems, one of the major thrusts of NASA's Space Science program. The NGST will provide a critical follow-on to the Hubble Space Telescope, and continue to deliver world-class optical and infrared science well into the second decade of the new millennium.

-more-

A goal of the Next Generation Space Telescope is to observe the first stars and galaxies in the Universe to further our understanding of how it formed following the Big Bang. NGST will have capabilities currently unavailable in existing ground-based or space telescopes.

NGST studies are underway and NASA plans to start formal development of the NGST in 2003, with a projected launch in 2007. NGST has a planned operational lifetime of ten years, and NASA expects that the operations cost for NGST will be in a range from \$15 million to \$25 million per year. The Association of Universities for Research in Astronomy (AURA) currently operates the Space Telescope Science Institute under contract to NASA. Possible adjustments to the existing contract, and the means by which selection and award will be made for NGST work, are under review.

NASA learned from its development of the Hubble that it was important to involve scientists early in the major mission science and operations planning. "We felt it was imperative to identify an NGST Science and Operations Center as soon as possible," said Huntress. "Through our analysis and consultation with our advisory committees, it became apparent that the most cost-effective and scientifically sound way to proceed was to expand the Institute's responsibilities to include the management of NGST."

The Space Telescope Science Institute presently has a combined staff of approximately 470 people, including 143 Ph.D. astronomers and scientists from the U.S. and the European Space Agency

Additional information about the NGST is available on the Internet at:

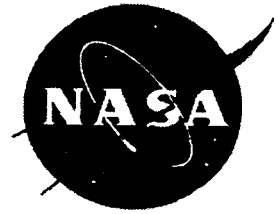
<http://www.ngst.nasa.gov>

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National Aeronautics and
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Washington, D.C. 20546
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For Release

Jennifer McCarter
Headquarters, Washington DC
(Phone: 202/358-1639)

June 4, 1998

Eileen M. Hawley
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-97

NASA NAMES ASTRONAUT CLASS OF 1998

Twenty-five women and men will make up the astronaut candidate class of 1998, scheduled to arrive at the Johnson Space Center, Houston, TX, in mid-August to begin one year of training and evaluation.

This year's class consists of eight pilot and 17 mission specialist candidates, including Barbara Morgan, who was named as an Educator Mission Specialist in January. Of the 25 class members, 21 are male and four are female.

The new class members are: Clayton C. Anderson; Lee J. Archambault (Maj., USAF); Tracy E. Caldwell, Ph.D.; Gregory E. Chamitoff, Ph.D.; Timothy J. Creamer (Maj., USA); Christopher J. Ferguson (Lt. Cmdr., USN); Michael J. Foreman (Cmdr., USN); Michael E. Fossum; Kenneth T. Ham (Lt. Cmdr., USN); Patricia C. Hilliard, M.D.; Gregory C. Johnson; Gregory H. Johnson (Maj., USAF); Stanley G. Love, Ph.D.; Leland D. Melvin; Barbara R. Morgan; William A. Oefelein (Lt., USN); John D. Olivas, Ph.D.; Nicholas J. M. Patrick, Ph.D.; Alan G. Poindexter (Lt. Cmdr., USN); Garrett E. Reisman, Ph.D.; Steven R. Swanson; Douglas H. Wheelock (Maj., USA); Sunita L. Williams (Lt. Cmdr., USN); Neil W. Woodward III (Lt., USN); and George D. Zamka (Maj., USMC).

Following a period of training and evaluation, the astronauts will receive technical assignments within the Astronaut Office before receiving a space flight assignment.

A complete list of the candidates and their biographical data can be found on the Internet at the following URL:

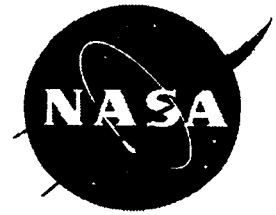
<ftp://ftp.hq.nasa.gov/pub/pao/pressrel/1998/98-097a.txt>

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For Release

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

June 8, 1998

RELEASE: 98-99

MICHAEL I. MOTT TO LEAVE NASA

Mike Mott, NASA Associate Deputy Administrator (Technical), has announced his plan to leave NASA to join Boeing Space Transportation, Seal Beach, CA, as Vice President, Business Development.

Mott, one of the Agency's top three managers, has served the NASA Administrator since January 1994.

"Mike has been a valuable asset to NASA, and his contributions will be sorely missed," Administrator Daniel S. Goldin said. "We wish him the best of luck in his new position. It has been an honor to work with him."

Mott served in the United States Marine Corps in numerous operational and staff assignments throughout the United States and the western Pacific. He graduated from the U.S. Naval Test Pilot School, participated in 89 major flight test projects, and commanded Marine Aircraft Group Forty One at Andrews Air Force Base. He accumulated over 3800 flight hours in 62 types of aircraft and made 210 carrier landings.

Mott was born in Nashville, TN. He graduated from Battle Ground Academy, received a bachelor's of engineering degree from Vanderbilt University and a master's of science degree from the University of Southern California.

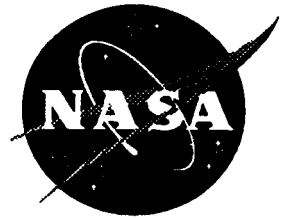
Mott is married to Kathy Sue McDonald and has two children, Michael and Ashley.

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Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600



Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

For Release
June 9, 1998

VIDEO ADVISORY: V98-62

SEEING MORE CLEARLY: SEAWINDS AND THE LATEST FROM SEAWIFS

Today's file contains animation of SeaWinds, NASA's next generation of El Nino monitoring device instruments. SeaWinds will be launched aboard NASA's Quick Scatterometer (QuikSCAT) satellite. QuikSCAT is a mission designed to complete turnaround from conception to orbit in a very short period of time. Also on NTV is the latest compilation of images showing the smoke and clouds from the raging Mexican fires moving across the Gulf of Mexico to the southern regions of the U.S.

ITEM 1: SEAWINDS ON QUICKSCAT - ANIMATION

ITEM 1a: SEAWINDS B-ROLL

The instrument at JPL's Spacecraft Assembly Facility.

ITEM 1b: INTERVIEW - JIM GRAF, SEAWINDS PROJECT MANAGER

For more information contact Mary Hardin at (818) 354-0344 or David Steitz at (202) 358-1730.

ITEM 2: LATEST VIEWS OF MEXICAN FIRES

Images from SeaWiFs on May 16 and June 5, 1998.

For more information contact Doug Isbell at (202) 358-1753 or Wade Sisler at (301) 286-6256.

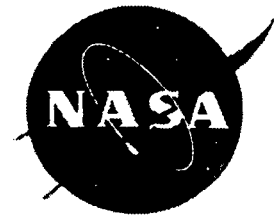
Video news file today at noon and 6:00 p.m. Eastern, with repeats every hour during the crew sleep cycle.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

NewsRelease

National Aeronautics and
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For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

June 9, 1998

Mary Hardin
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-0344)

RELEASE: 98-100

SEAWINDS INSTRUMENT SHIPPED FOR INTEGRATION ON QUIKSCAT

A major milestone has been reached in NASA's development of "faster, better, cheaper" space missions with the delivery of the SeaWinds instrument, NASA's next generation El Nino monitoring device that measures wind speed and direction over the world's oceans, to Ball Aerospace in Boulder, CO, for integration into the Quick Scatterometer (QuikSCAT) satellite.

QuikSCAT is a mission designed to complete turnaround from conception to orbit in a very short period of time. "One of the real challenges of this mission is having to do it in a year. The delivery of the instrument to Ball Aerospace signifies that we are on schedule and headed to our one-year goal," said Jim Graf, the QuikSCAT project manager at NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA. "This is the first major JPL Earth Science mission to have a development time of approximately one year, from approval to launch, since the Explorer 1 satellite in the late 1950s."

The SeaWinds instrument on the QuikSCAT satellite is a specialized microwave radar that measures both the speed and direction of winds near the ocean surface. Winds directly affect the turbulent exchanges of heat, moisture and greenhouse gases between the atmosphere and the ocean. Changes in the winds along the equator play a key role in the formation of the El Nino phenomenon in the Pacific Ocean. The National Oceanic and Atmospheric Administration also is supporting the mission and will use the mission data for improved weather forecasting and storm warning, helping forecasters to more accurately determine the paths and intensities of tropical storms and hurricanes. The versatile instrument also will be used by climate change researchers, weather forecasters and commercial shipping interests.

-more-

SeaWinds will use a rotating dish antenna with two microwave beams and will radiate microwaves across 90 percent of the Earth's ice-free oceans every day. The instrument will collect wind speed and wind direction data in a continuous 1,118 mile-wide band, making approximately 400,000 measurements each day.

The QuikSCAT satellite mission will restart the ocean-wind data stream which was lost when the Japanese Advanced Earth Observing Satellite (ADEOS) with a NASA Scatterometer onboard ceased functioning on June 30, 1997. Before the loss of ADEOS, NASA was able to obtain valuable data about summer and winter monsoon seasons and the onset of the El Nino event.

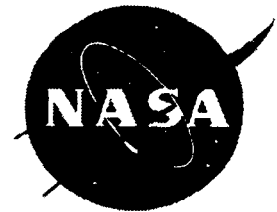
QuikSCAT is scheduled for launch in November 1998, from Vandenberg Air Force Base, CA, on a Titian II launch vehicle. QuikSCAT is the first Indefinite Delivery/Indefinite Quantity (ID/IQ) contract for rapid delivery of satellite core-systems. The ID/IQ procurement method provides NASA a faster, better, cheaper method for the purchase of satellite systems through a "catalog," allowing for shorter turnaround time from mission conception to launch. Total mission costs for QuikSCAT are \$93 million.

JPL's NSCAT/SeaWinds Program Office is responsible for SeaWinds and provides overall project management, as well as science ground processing systems and the SeaWinds instrument. NASA's Goddard Space Flight Center, Greenbelt, MD, manages development of the satellite that is being designed and fabricated by Ball Aerospace and Technologies Corp. under the ID/IQ procurement method. The QuikSCAT mission is part of NASA's Earth Sciences enterprise, a long-term research program designed to study Earth's land, oceans, atmosphere, ice and life as a total integrated system.

NewsRelease

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For Release

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Headquarters, Washington, DC
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June 9, 1998

Allen Kenitzer
Goddard Space Flight Center, Greenbelt, MD
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RELEASE: 98-101

NASA ATMOSPHERIC RESEARCHERS FOCUS ON MEXICAN FIRES

Since the beginning of the Mexican fires in late March and early April of this year, atmospheric researchers at NASA using the Total Ozone Mapping Spectrometer (TOMS), have been closely monitoring the fires and the smoke aerosols emitted by the fires. TOMS obtains daily images of the amount of smoke present in the atmosphere anywhere in the world.

Scientists have a keen interest in smoke aerosols generated by fires like those in Mexico because smoke contributes to the overall global air-pollution levels that can impact the quality of air that humans breathe. Residents of Texas have been issued warnings to remain indoors to avoid adverse health impacts, such as asthma, from the smoke. Increased smoke concentration from human-induced fires could contribute to global climate change.

The fires started in southern Mexico and northern Guatemala near the end of March 1998. Though most of the fires were started as part of the annual clearing of agricultural fields, some started naturally because of the extremely dry conditions. The dry conditions are associated with the El Niño weather patterns similar to those that caused the fires in Indonesia earlier this year.

The small particles, called aerosols, that comprise smoke can affect the amount of energy reaching the Earth's surface by reflecting and/or absorbing sunlight. Smoke aerosols also can act as small particles upon which clouds can form. Clouds containing smoke aerosols are believed to reflect and absorb energy in different ways than clouds formed from natural particles such as dust or sea salt.

-more-

"Shortly after the fires started, we noticed the increased amount of aerosols (in this case smoke) in the region," said Dr. Jay R. Herman, an atmospheric scientist at NASA's Goddard Space Flight Center, Greenbelt, MD. "By mid-April large amounts of smoke were covering parts of Mexico with plumes extending into Florida, Texas, New Mexico, California and Wisconsin."

The smoke was sufficiently thick that it was easily visible on the ground and resembled a light haze to medium fog in parts of Texas, Georgia and Florida, Herman said. On May 16 the smoke plume extended across the Eastern U.S., passing through Ohio, and into Southern Canada.

Because of the difficulties in extinguishing the fires, the large smoke plumes are still present in Mexico. The smoke tends to extend from the ground up to an altitude of about three kilometers (1.8 miles) and follow the prevailing winds. Due to wind shear in this altitude range, there is frequently more than one plume, with smoke blowing from west to east and from south to north. With prospects of rain slim due to the El Nino-driven drought, scientists believe the smoke may linger for a long time.

Meanwhile, space observations can document such events as the highly unusual transport of large amounts of dust from China (Gobi desert) across the Pacific Ocean and striking parts of the Western U.S., and the smoke from Canadian fires in the Pacific Northwest.

TOMS is part of NASA's Earth Science strategic enterprise, a long-term, coordinated research effort to study the Earth as a global system. The TOMS program is managed by the Goddard Space Flight Center for NASA's Office of Earth Science, Washington, DC.

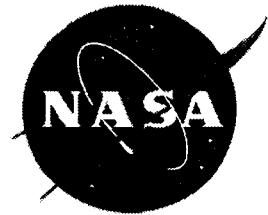
TOMS images of the smoke plumes are available at URL:

<http://jwocky.gsfc.nasa.gov>

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For Release

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Headquarters, Washington, DC
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June 11, 1998

Laura-Lee Davidson
Quality Education for Minorities Network, Washington, DC
(Phone: 202/659-1818)

RELEASE: 98-102

NASA 1998 SHARP PLUS APPRENTICES SELECTED

NASA and the Quality Education for Minorities Network (QEM) have selected 240 high school students to be apprentices in science and engineering research activities beginning June 15, as part of NASA's 1998 SHARP PLUS Research Apprenticeship Program.

Now in its sixth year, the goal of the SHARP PLUS program is to increase, strengthen, and diversify the pool of students for mathematics, science, and engineering college majors and careers. It also will enable students, under the guidance of industry - or university-based mentors, to spend June 15 through Aug. 7 in residence at twelve universities that have joined with NASA and the QEM.

The twelve participating universities are:

California State University, Los Angeles; Cornell University, Ithaca, NY; Hampton University, Hampton, VA; Morgan State University, Baltimore, MD; Norfolk State University, Norfolk, VA; North Carolina A&T University, Greensboro; Southern University at Baton Rouge, LA; Texas A&M University, College Station; University of Cincinnati, OH; University of New Mexico, Albuquerque; University of Wisconsin, Madison.

Chosen from over 1,000 applicants, this year's apprentices represent 180 high schools and come from 34 states; Puerto Rico; Guam; the U.S. Virgin Islands; and a U.S. military base in Germany.

The program is administered by the QEM for NASA's Education Division, which is tasked to promote excellence in America's education system. The QEM is a nonprofit organization dedicated to improving the education of minorities and other underrepresented groups throughout the nation.

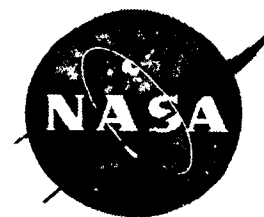
The list of participating high school students and their home states is available on the Internet at URL: <ftp://ftp.hq.nasa.gov/pub/pao/pressrel/1998/98-102a.txt>

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For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1753)

June 15, 1998

Sally Harrington
Lewis Research Center, Cleveland, OH
(Phone: 216/433-2037)

NOTE TO EDITORS: N98-41

ROBOT COMPETITION ON CAPITOL HILL TO DEMONSTRATE STUDENT ENTHUSIASM FOR SCIENCE AND MATH

Student-built robots will take over Capitol Hill on Thursday, June 18, giving members of Congress and the media an opportunity to see the exciting results of a competition that combines an improved understanding of math, technology and science with teamwork and a thirst for achievement.

The "Capitol Hill Robotics Invitational" is a mini-competition among rubber ball-shooting robots designed and built by teams of high school students and their mentors in government, industry, and academia. It will feature 12 of the 199 teams that competed in the FIRST (For Inspiration and Recognition of Science and Technology) national finals at EPCOT Center in Florida earlier this year.

The event, which runs from 9:30 a.m. to 4:30 p.m. in the foyer of the Rayburn House Office Building, has been organized by U.S. Representative Bill Delahunt (D-MA), and is sponsored by the House Science Committee.

FIRST has been running its national contest for seven years. Engineers from government, businesses and universities team up with high school students, starting with identical packages of materials supplied by FIRST, and work together to design, fabricate and test their robots in six intense weeks. Their goal is a championship robot that will compete in a tournament complete with referees, spectators, and cheerleaders.

"In the process, the students get a hands-on, inside look at the engineering profession," said David Lavery, robotics program manager in NASA's Office of Space Science, who has been active in FIRST for the past four years. "Meanwhile, we definitely get a charge from their enthusiasm and innovation, which reminds many of us why we got into engineering in the first place."

-more-

The NASA Lewis Research Center/East Technical High School team from Cleveland, OH, will represent the 18 teams sponsored by various parts of the agency, including NASA Headquarters; Ames Research Center, Moffett Field, CA; Goddard Space Flight Center, Greenbelt, MD; Johnson Space Center, Houston, TX; Kennedy Space Center, FL; and the Langley Research Center, Hampton, VA. The NASA Lewis/East Tech team has competed in the FIRST competition for five consecutive years. East Tech is a thematic engineering high school in the Cleveland City School District located within the inner city.

At the national competition in Orlando, FL, in April 1998, the team was a finalist for the Chairman's Award. This most prestigious award of the entire program is presented to the team judged to have created and documented the best partnership effort between team partners including outreach activities with children, universities, and corporate sponsors in their community as they prepare for the competition.

Prior to the national competition, the Lewis/East Tech team competed at the FIRST Great Lakes Regional Competition, where they won the Xerox Creativity Award. This award is given to the team that displays the most creative design, use of a component or the most creative or unique strategy of play. The judges noted that the NASA/East Tech robot used design ingenuity by applying aluminum powder coatings on its rollers to give them traction in gripping the balls. They also cited the team's use of a retractable tongue as a means of pulling the balls into the ladder rails to prevent them from being knocked loose by opponents.

For further information on FIRST and the NASA Lewis/East Tech team, see the following Internet pages:

<http://www.usfirst.org/>

<http://www.lerc.nasa.gov/WWW/FIRST/>

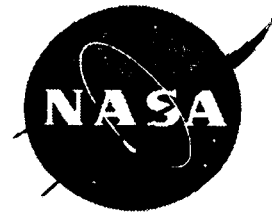
For further details on the June 18 event, contact Julie Carr in Rep. Delahunt's office at 202/225-3111.

-end-

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For Release

Don Nolan-Proxmire
Headquarters, Washington, DC
(Phone: 202/358-1983)

June 15, 1998

John G. Watson
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-103

NEW TECHNOLOGY GIVES MOTORISTS AN EARLY WARNING

A new traffic technology can warn motorists quickly of rapidly approaching emergency vehicles and trains. The Emergency Vehicle Early Warning Safety System, or E-VIEWS, developed with the assistance of the Technology Affiliates Program at NASA's Jet Propulsion Laboratory, Pasadena, CA, is particularly timely given the increasing incidence of police chases.

The system equips emergency vehicles with transponders that communicate via microwave with receivers on large visual displays deployed on the mastarms above the centers of intersections. As the vehicles approach the intersections, signal lights turn yellow, then red, for cross-traffic, and approaching drivers also view flashing vehicle symbols on the visual displays.

These active displays, linked to the receivers, inform drivers of the direction from which emergency traffic is approaching or departing the intersection. The vehicle symbols appear to move across the displays, synchronized with the actual emergency vehicles' movements.

"More than 156,000 accidents involving emergency vehicles occurred at intersections in U.S. cities from the mid-1980s to 1995 alone," explained Jim Davidson, president and CEO of E-Lite Limited of Agoura Hills, CA, which developed the system.

"Emergency vehicles present a serious traffic hazard to themselves, other vehicles and pedestrians while passing against cross traffic through an intersection, causing multi-million dollar lawsuits against cities and states," he added.

Davidson, a former marketing executive, has first-hand experience with the dangers of high-speed vehicles: He was driving his car once when it was almost broadsided by a fire truck at a Los Angeles intersection.

-more-

Through the Technology Affiliates Program, large and small businesses can work with JPL engineers to solve specific tasks. Upon joining this innovative program, E-Lite was paired with JPL engineers with specialized expertise to solve engineering design issues. These included not only E-VIEWS' customized transponders, but also comprehensive designs which blend with existing city communications infrastructures. E-VIEWS is now being further refined with an eye toward installation of demonstration models in large metropolitan areas.

The Technology Affiliates Program is just one of several JPL technology transfer programs designed to bring the benefits of the space program to American industry. For further information, visit the Commercial Technology Program's Web site at <http://techtrans.jpl.nasa.gov/tu.html>

JPL is managed for NASA by the California Institute of Technology.

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For Release

Don Nolan-Proxmire
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June 16, 1998

John Bluck
Ames Research Center, Moffett Field, CA
(Phone: 650/604-5026)

RELEASE: 98-104

NASA LIGHTWEIGHT 'ICE ZAPPER' TO BE USED ON NEW AIRCRAFT

An innovative NASA ice removal system will be included with the first new general aviation aircraft to be introduced in the United States in 15 years. The lightweight, patented device will zap dangerous ice from wings and other aircraft parts during flight.

Lancair Inc., Bend, OR, will test the ice removal system with its Lancair IV aircraft and make the system available later this summer with the new Columbia 300, a four-seat, general aviation airplane. Even in warm climates, aircraft icing can be a problem at higher altitudes where temperatures are cold.

In 1995, NASA licensed the ice zapper, officially known as the Electro-Expulsive Separation System, to Ice Management Systems, Inc., Temecula, CA, for development and marketing. Ice Management recently agreed to develop the system for Lancair aircraft. The ice zapper could help NASA meet its goal of greatly improving commercial aircraft safety.

"The ice zapper uses one-thousandth the power and is one-tenth the weight of electro-thermal ice removal systems used today," said inventor Leonard Haslim of NASA's Ames Research Center, Moffett Field, CA. "The system pulverizes ice into small particles and removes layers of ice as thin as frost or as thick as an inch of glaze."

Haslim, a Naval jet fighter pilot during the Korean conflict, continues to be concerned with flying safety. He holds numerous patents, and he won NASA's inventor of the year award in 1988 for the Electro-Expulsive Separation System, which he also calls the "ice zapper."

"The Lancair aircraft, which cruises above 18,000 feet at 345 mph, is the perfect first candidate for this unique, new de-icing system, and this program complements our goal of enhancing safety and increasing the utility of our aircraft," said Lancair president Lance Neibauer.

-more-

"I think that once it is working on a small aircraft, engineers will realize the system will work well with larger airplanes too," Haslim said.

There are other methods to combat airframe icing, including thermal de-icing and pneumatic boots. "Thermal de-icers that melt ice use a lot of energy," Haslim said. "Also, melted ice can re-freeze elsewhere on the aircraft, or larger loose ice shards can fly into the aircraft to cause damage."

Pneumatic boots inflate slowly and need as much as a quarter inch of ice to accumulate before they start to work. They also dislodge bigger ice pieces that can damage aircraft engines, according to Haslim. "In one winter alone, 26 F/A-18 engines were damaged by ice chunks hitting engine fan blades," he said.

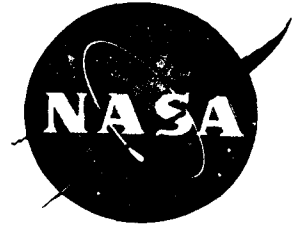
"The system uses a powerful electronic photoflash-like power supply combined with a thin copper ribbon that looks like a belt flattened on itself and embedded in a rubbery plastic," he said. "The looped, flattened copper ribbons are bonded to wings, engine inlets and other airplane parts where ice can form."

In less than a millisecond, the system sends bursts of high-current electricity through the two parallel layers of copper ribbon. The resultant magnetic fields suddenly repel each other. The upper ribbon jumps less than twenty-thousandth of an inch causing a high acceleration. The motion breaks the ice bond, shatters the ice into table-salt-size particles and expels them from the airplane's surface. The system can run continually during flight, pulsing once or twice a minute, to keep airplane surfaces ice free. The system's overlapping copper ribbon prevents electrical interference.

The task of converting the Electro-Expulsive Separation System patent into a commercial product has taken nearly four years and almost \$1,000,000, according to Richard Olson, president and chief operating officer of Ice Management.

NASA neither verifies product claims nor endorses commercial offerings. To learn more about NASA innovations, commercialization efforts and the agency's technology transfer programs, interested parties can call 1-800-678-6882 or access the NASA Commercial Technology Network web page at URL: <http://nctn.hq.nasa.gov/>

News Release



National Aeronautics and
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For Release

Douglas Isbell
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June 16, 1998

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Ames Research Center, Moffett Field, CA
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Anne Watzman
Carnegie Mellon University, Pittsburgh, PA
(Phone: 412/268-3830)

RELEASE: 98-105

ARCTIC CRATER EXPEDITION TO SEEK MARS SCIENCE INSIGHTS AND TEST FUTURE EXPLORATION TECHNOLOGIES

NASA scientists soon will explore a barren Arctic meteorite impact crater to attempt to learn more about Mars and its early history, while testing technologies useful for future robotic and human exploration of the planet.

From June 22 to July 26, a 20-member science team from NASA and several other research organizations will explore the Haughton Impact Crater and its surroundings on Devon Island in the Arctic Circle.

Scientists consider the site a potential Mars analog because many of its geologic features, such as the crater's ice-rich terrains, its ancient lake sediments and nearby networks of small valleys, resemble those reported at the surface of Mars. The site may shed light in particular on the early history of Mars, when the planet's climate may have been wetter and warmer.

"The cold, relatively dry, windy and unvegetated environment at the Haughton site is milder and wetter than present-day Mars, but it may give us an idea of what early Mars was like and how some of its surface features were formed," said Principal Investigator Dr. Pascal Lee of NASA's Ames Research Center, Moffett Field, CA.

During the expedition, Dr. Omead Amidi and other engineers from Carnegie Mellon University's Robotics Institute, Pittsburgh, PA, will conduct field tests of an experimental, robotic helicopter. "The mission provides a great opportunity to demonstrate the feasibility and the value of robotic aircraft for mapping and surveying applications," Amidi said.

- more -

Carnegie Mellon's small, 160-pound autonomous helicopter has vision-based stability and position control, as well as an onboard navigation computer, laser rangefinder and video system for site mapping. More information about the unpiloted helicopter may be found at the following website: <http://www.ri.cmu.edu/project/chopper>

In addition to the tests with the autonomous helicopter, scientists also will conduct experiments with a ground-penetrating radar system, a field spectrometer, drilling equipment and a stereo camera.

The radar system will be deployed in an attempt to map ground-ice and other subsurface conditions within and outside the crater's 12-mile (20-kilometer) diameter. "The ability to find underground ice, both for human consumption and geologic studies, will be critical in the exploration of Mars," said Dr. Aaron Zent of Ames, Dr. Lee's post-doctoral research advisor.

Scientists will use a field spectrometer to determine the site's reflective qualities and better understand the crater's compositional evolution. In another experiment, scientists will use a portable drill to obtain core samples from ten feet deep in the frozen ground. Core samples of sediments from a lake that once occupied the crater will provide information about local climate evolution. Since the use of liquid drilling lubricants might be precluded on Mars, none will be used in this test.

A portable stereo camera system previously used by Carnegie Mellon's Nomad rover during its unprecedented 133-mile wheeled trek through Chile's Atacama Desert last summer will provide high-resolution images of the site, and produce images for a 360 degree photo-realistic virtual reality project being developed by Ames' Intelligent Mechanisms Group.

Using laptop computer systems and "mobile workstations" developed by Ames' Intelligent Mobile Technologies Team, scientists will communicate with other field team members and send live images via a wireless link. Team members will operate from a base camp on a terrace of the Haughton River within the crater's perimeter and explore the site with All-Terrain Vehicles. Supplies will be brought in by Twin Otter airplane, while a helicopter will aid exploration of remote sites.

As part of the expedition's educational outreach program, the following website will be updated regularly with new data and images as available: <http://www.arctic-mars.org>

The total cost of the project is \$80,000. NASA is partially funding the project through a National Research Council grant. Additional support is provided by Ames Research Center; NASA's Johnson Space Center, Houston, TX; the Geological Survey of Canada; the Polar Continental Shelf Project of Canada; the Nunavut Research Institute, Canada; the Robotics Institute of Carnegie Mellon University; NovAtel Communications, Calgary, Alberta, Canada; and the National Geographic Society.

NewsRelease

National Aeronautics and
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Washington, D.C. 20546
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For Release

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Headquarters, Washington, DC
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June 18, 1998

Lanee Cooksey
Stennis Space Center, MS
(Phone: 228/688-3341)

NOTE TO EDITORS: N98-42

STENNIS TO HOLD TECHNOLOGY BRIEFINGS JUNE 23 & 24

The Technology Transfer Office at NASA's Stennis Space Center, MS, will host a technology commercialization briefing there at 8 a.m. EDT Tuesday, June 23, and a dual use technology briefing at 8 a.m. EDT Wednesday, June 24, highlighting two new NASA technologies that can detect plant stress before resulting damage becomes visible to the human eye.

Plant stress is the reaction of plants to environmental conditions that are unfavorable to growth, such as lack of sufficient nutrients, inadequate watering, disease or insect infestation. The reaction most people recognize is a change in leaf color.

NASA is seeking qualified U.S. companies to help license a small, lightweight, hand-held device, known as the Hand-held Plant Stress Monitor. The device measures plant health by determining the chlorophyll content of leaves. NASA also is seeking qualified U.S. companies to help further develop through exclusive or non-exclusive licenses a second device. That device, available for development between NASA and a commercial partner, is a portable video imager that determines plant health by measuring the reflected light of leaves to determine their chlorophyll content. The device gives the user an easy-to-read indication of the condition of plants being observed.

Researchers at Stennis have constructed a prototype of each device and filed patent applications. The benefits of the new devices are their portability, easy use, low cost, adaptability and accuracy. The devices may be applied to such areas as agriculture, precision farming, horticulture, plant research, forestry, paper manufacturing, lawn care and other public and government activities.

-more-

-2-

Commercialization opportunities may exist through licensing, cooperative development and technical consulting. Companies participating in the briefings also will receive information on the process needed to establish partnership agreements and/or licenses for commercialization of the devices. Industry representatives interested in attending these technology briefings should contact Mark Obenshain of the Research Triangle Institute at 919/541-7429 by June 19.

-end-

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For Release

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June 18, 1998

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RELEASE: 98-107

NASA AND FRENCH MINISTER ALLEGRE AGREE TO EXPAND SPACE COOPERATION

NASA and the Centre National d'Etudes Spatiales (CNES) have agreed to explore joint cooperation on the exploration of Mars, telemedicine and education.

Daniel S. Goldin, NASA Administrator, and Professor Claude Allegre, French Minister for National Education, Research and Technology, met today in Washington, DC, to discuss current and future space cooperation.

Mars exploration is envisioned as an international endeavor involving bilateral and multilateral cooperation, and France and the United States are interested in expanding cooperation in this area.

NASA and CNES have agreed to explore joint cooperation on the exploration of Mars, with focus on the first Mars Sample Return mission, now scheduled for launch in the summer of 2005. Current baseline discussions anticipate French provision of an Ariane-5 launch vehicle and other hardware including the orbiter and science packages. NASA will be responsible for the overall Mars Sample Return mission, including the lander, rover, and other mission elements. As part of this cooperation, French scientists also will participate in various science activities associated with NASA's Mars Surveyor Program, for example, those addressing landing site and sample selection criteria and sample analysis.

NASA and CNES already are cooperating in the 1996 Mars Global Surveyor mission, with CNES providing the Mars Relay communications package and contributing to the scientific payload.

- more-

In the field of telemedicine, NASA's Commercial Space Center for Medical Informatics and Technology Applications at Yale University School of Medicine; the Institute of Telemedicine in Toulouse, France; and the Institute de Medecine et de Physiologie Spatiale (MEDES) in Toulouse, France, have agreed to explore potential collaborations. Cooperation between NASA's National Space Biomedical Research Institute and MEDES also is being explored.

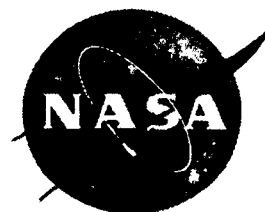
In addition, NASA and CNES cooperation in the field of education was initiated with the successful inauguration of a transatlantic computer hookup between French and American students on May 13, 1998, linking the Ecole Nationale de Chimie, Physique et Biologie, Paris; the Brooklyn School for Global Studies, Brooklyn, New York; the American School of Paris; and Kramer Junior High School, Washington, DC.

- end -

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For Release

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June 19, 1998

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RELEASE: 98-108

NASA, STATE OF OHIO, CASE WESTERN RESERVE UNIVERSITY AND INDUSTRY LAUNCH ADVANCED TECHNOLOGY INITIATIVE

In response to a challenge from NASA Administrator Daniel S. Goldin, NASA's Lewis Research Center, Cleveland; the State of Ohio; and Case Western Reserve University (CWRU) today announced the Glennan Microsystems Initiative to address the research, development and application needs of NASA and industry in the field of microsystems.

Cleveland Tomorrow's Technology Leadership Council, an organization of Northeast Ohio CEOs, advanced the idea to couple cutting-edge microsystems capabilities at NASA and Case Western Reserve University with industry. The Initiative, named for T. Keith Glennan -- NASA's first administrator and former CWRU president -- will offer microsystems to a range of manufacturing- and technology-intensive companies, as well as meet NASA mission requirements.

"Microsystems are miniaturized electrical and mechanical devices as small as a human hair that will not only help ensure NASA's future missions are faster, better and cheaper, but also give Ohio's companies cutting-edge technology to compete in the international marketplace. This is an extremely important collaboration," said Goldin in praise of the effort. This new technology is an area of increasing international competition, and joint activities such as these are essential to ensure U.S. leadership. I believe this will greatly benefit NASA and Ohio industry."

- more -

The Initiative -- including \$16 million in federal and \$4.5 million in state funds -- is a five-year project designed to build on existing strengths and resources in Ohio. It is jointly funded by NASA, the State of Ohio, industry, and other foundations and federal agencies.

While the emphasis is on Ohio industry, participation in the Initiative is open to any U.S. company. State of Ohio support is being provided through its newly established Technology Action Fund, designed to leverage federal capabilities and resources.

"This is a technology that will have immense impact on industry throughout Ohio," noted Ohio Governor George V. Voinovich. "The Glennan Microsystems Initiative will provide great benefit to Ohio companies as they deploy this powerful technology in their new products and processes. It is very appropriate that this be the inaugural award of the Technology Action Fund."

"T. Keith Glennan was a visionary who helped shape technology in the 20th century, and it is appropriate that this initiative is named for him," said Agnar Pytte, CWRU president. "This collaboration with NASA and industry will allow us to continue Keith Glennan's commitments to both scientific and civic endeavor and promises to be a force in technological innovation for the 21st century."

The Glennan Initiative builds on current strengths and collaborative relationships of its partners. NASA Lewis provides more than two dozen investigators, state-of-the-art analytical and testing facilities, R&D 100 Awards and a NASA Center of Excellence. CWRU is rated one of the top four microelectromechanical systems (MEMS) programs in the U.S. and provides a core of highly recognized investigators, state-of-the-art fabrication and clean room facilities, multi-agency sponsorship, and is in the process of expanding its program capabilities.

Bill Patient, CEO of Geon Company and leader of the Cleveland Tomorrow effort, commenting on the Initiative said, "Industry is keenly interested in microsystems. They are also seeking opportunities to leverage excellence beyond their internal capabilities. The Glennan Microsystems Initiative is a wonderful combination of technology and organizational opportunities whose time is now. I commend NASA and the State of Ohio for their leadership in making this happen."

Microsystems technology is projected to enable significant industrial innovations and change in traditional manufactured goods. To date, microsystems have had only limited U.S. industrial applications, but the Glennan Initiative will deliver tangible results to companies as diverse as bearings makers, medical devices and imaging companies, aircraft suppliers, tire makers, and consumer product companies. The Initiative will focus on physical and chemical sensors and actuators with a particular emphasis on harsh environments. Examples of such environments include high temperatures, large stress/strains, rotating parts, structural curvatures, erosive flows and corrosive media.

- 3 -

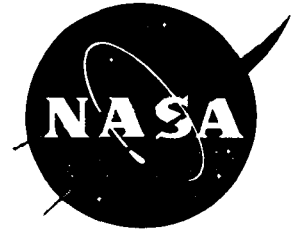
The Glennan Initiative will utilize a network of existing public-private technology intermediaries to commercialize its technology. The Great Lakes Industrial Technology Center will lead this effort with the help of the Ohio Edison Centers (including CAMP and Edison BioTechnology Center); Ohio MEMSNet (a consortium including Ohio State University, University of Cincinnati, University of Dayton, University of Toledo, Wright State University, Cleveland Clinic Foundation, and the Air Force Institute of Technology); Lewis Incubator for Technology; Ohio Aerospace Institute; and selected universities.

- end -

Video Advisory

National Aeronautics and
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For Release

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June 23, 1998

VIDEO ADVISORY: V98-67

LAUNCHING TOWARD THE FUTURE: INTERNATIONAL SPACE STATION PREPARATIONS

Today's video file provides recent footage of early space station elements being built and prepared for launch in Russia and interviews with members of the first station crew who are now training at NASA's Johnson Space Center, Houston, TX.

ITEM 1: FIRST STATION COMPONENT

B-roll of Zarya control module, targeted for a Nov. 20 launch as the first station component.

ITEM 1a: INSIDE THE SERVICE MODULE

Footage of the interior of the Service Module, housing the early crew quarters and station command and control equipment.

ITEM 1b: INTERVIEWS - EXPEDITION 1 CREW OF ISS

Interviews with Commander and astronaut Bill Shepherd; Soyuz Commander and cosmonaut Yuri Gidzenko; Flight Engineer and cosmonaut Sergei Krikalev.

For additional information contact Dwayne Brown at (202) 358-1726 or James Hartsfield at (281) 483-5111.

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

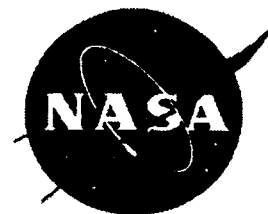
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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For Release

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June 23, 1998

RELEASE: 98-109

LEWIS SPACECRAFT FAILURE BOARD REPORT RELEASED

NASA's Earth-orbiting Lewis spacecraft failed last fall due to a combination of a technically flawed attitude-control system design and inadequate monitoring of the spacecraft during its crucial early operations phase, according to the report of the Lewis Spacecraft Mission Failure Investigation Board.

Lewis was launched on August 23, 1997, with the goal of demonstrating advanced science instruments and spacecraft technologies for measuring changes in Earth's land surfaces. The spacecraft entered a flat spin in orbit that resulted in a loss of solar power and a fatal battery discharge. Contact with the spacecraft was lost on Aug. 26, and it then re-entered the atmosphere and was destroyed on Sept. 28. The 890-pound spacecraft was designed and built by TRW Space & Electronics Group, Redondo Beach, CA, as part of NASA's Small Spacecraft Technology Initiative.

The design of the Lewis attitude control system was adapted by TRW from its design for the system on the Total Ozone Mapping Spectrometer spacecraft. The failure board found that this adaptation was done without sufficient consideration for applying the system's design to a different primary spacecraft spin-axis orientation on Lewis. As a result, minor rotational perturbations, possibly due to small imbalances in the forces produced by the spacecraft's attitude control thrusters, caused the Lewis spacecraft to enter a spin. This situation eventually overloaded the spacecraft's control system while it was in a safhold mode. Prelaunch simulation and testing of the spacecraft's safhold modes also was flawed because it failed to analyze this possibility, the failure board found.

The combination of these errors with the subsequent assumption that a small crew could monitor and operate Lewis with the aid of an autonomous safhold mode, even during the initial operations period, was the primary cause of the mission failure, according to the failure board's report.

The failure board also assessed the role of the "faster, better, cheaper" project management approach in the Lewis program.

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"The Lewis mission was a bold attempt by NASA to jumpstart the application of the 'faster, better, and cheaper' philosophy of doing its business," said Christine Anderson, chair of the failure board and Director of Space Vehicles for the U.S. Air Force Research Laboratory at Kirtland Air Force Base, NM. "I do not think that this concept is flawed. What was flawed in the Lewis program, beyond some engineering assumptions, was the lack of clear understanding between NASA and TRW about how to apply this philosophy effectively. This includes developing an appropriate balance between the three elements of this philosophy, the need for well-defined, well-understood and consistent roles for government and industry partners, and regular communication between all parts of the team."

"The Lewis failure offers us some valuable lessons in program management and in our approach to technical 'insight.' Lewis was an extreme example of allowing the contractor to have engineering autonomy. In the end, however, NASA has the responsibility to assure that the project objectives are met, and our assurance process was ineffective in this case," said Dr. Ghassem Asrar, NASA Associate Administrator for Earth Science. "NASA's Office of the Chief Engineer is developing general 'lessons learned' from this project and other 'faster, better, cheaper' efforts, and we intend to apply them vigorously to all of our future missions, including the second generation of spacecraft in the Earth Observing System.

"I would like to commend Christine Anderson and the members of her panel for their thorough job, and thank all the participants in the Lewis program for their cooperation with this review," Asrar added.

The total cost to NASA of the Lewis mission, including its launch vehicle and one year of planned orbital operations, was \$64.8 million. NASA incurred an additional cost of \$6.2 million for storage and maintenance of the spacecraft during a one-year delay due to launch vehicle issues.

Lewis was part of NASA's Earth Science enterprise, a long-term research program designed to study the Earth's land, oceans, air, ice and life as a total system.

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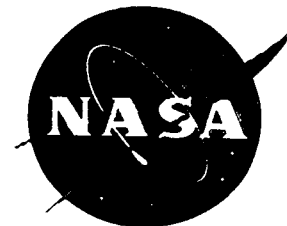
EDITOR'S NOTE: The report of the Lewis Spacecraft Mission Failure Investigation Board is available via the Internet at the following address:

http://arioch.gsfc.nasa.gov/300/html/lewis_document.pdf

News Release

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For Release
June 24, 1998

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RELEASE: 98-110

HUBBLE SPACE TELESCOPE HELPS FIND EVIDENCE THAT NEPTUNE'S LARGEST MOON IS WARMING UP

Observations obtained by NASA's Hubble Space Telescope and ground-based instruments reveal that Neptune's largest moon, Triton, seems to have heated up significantly since the Voyager spacecraft visited it in 1989.

"Since 1989, at least, Triton has been undergoing a period of global warming -- percentage-wise, it's a very large increase," said James L. Elliot, an astronomer at the Massachusetts Institute of Technology (MIT), Cambridge, MA. The warming trend is causing part of Triton's frozen nitrogen surface to turn into gas, thus making its thin atmosphere denser. Dr. Elliot and his colleagues from MIT, Lowell Observatory, and Williams College published their findings in the June 25 issue of the journal *Nature*.

Even with the warming, no one is likely to plan a summer vacation on Triton, which is a bit smaller than Earth's moon. The five percent increase means that Triton's temperature has risen from about 37 degrees on the absolute (Kelvin) temperature scale (-392 degrees Fahrenheit) to about 39 degrees Kelvin (-389 degrees Fahrenheit). If Earth experienced a similar change in global temperature over a comparable period, it could lead to significant climatic changes.

Triton, however, is a very different and simpler world than Earth, with a much thinner atmosphere, no oceans, and a surface of frozen nitrogen. But the two share some contributing factors to global warming, such as changes to the Sun's heat output, how much sunlight is absorbed and reflected by their surfaces, and the amount of methane and carbon monoxide (greenhouse gases) in the atmosphere.

- more -

"With Triton, we can more easily study environmental changes because of its simple, thin atmosphere," Elliot explained. By studying these changes on Triton, the scientists hope to gain new insight into Earth's more complicated environment.

Elliot and his colleagues explain that Triton's warming trend may be driven by seasonal changes in its polar ice caps. Triton is approaching an extreme southern summer, a season that occurs every few hundred years. During this special time, the moon's southern hemisphere receives more direct sunlight, which heats the polar ice caps. "For a northern summer on Earth, it would be like the Sun being directly overhead at noon north of Lake Superior," Elliot said.

The scientists are basing a rise in Triton's surface temperature on the Hubble telescope's detection of an increase in the moon's atmospheric pressure, which has at least doubled in bulk since the time of the Voyager encounter. Any nitrogen ice on Triton that warms up a little results in a considerable leap in atmospheric pressure as the vaporized nitrogen gas joins the atmosphere. Because of the unusually strong link between Triton's surface ice temperature and its atmospheric pressure, Elliot says scientists can infer a temperature rise of three degrees Fahrenheit over nine years.

The scientists used one of Hubble's three Fine Guidance Sensors (used to keep the telescope pointed at a celestial target by monitoring the brightness of guide stars) in November 1997 to measure Triton's atmospheric pressure. When Triton passed in front of a star known as "Tr180" in the constellation Sagittarius, the guidance sensor measured the star's gradual decrease in brightness as Triton passed in front of it. The starlight became fainter as it traveled through Triton's thicker atmosphere.

Elliot and his colleagues list two other possible explanations for Triton's warmer weather. Because the frost pattern on Triton's surface may have changed over the years, it may be absorbing a little more of the Sun's warmth. Alternatively, changes in reflectivity of Triton's ice may have caused it to absorb more heat.

The Space Telescope Science Institute is operated by the Association of Universities for Research in Astronomy, Inc. (AURA), for NASA, under contract with the Goddard Space Flight Center, Greenbelt, MD. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency (ESA).

- end -

NOTE TO EDITORS: An illustration and caption associated with the release are available via the World Wide Web at: <http://opposite.stsci.edu/pubinfo/1998/23> or via links in:
<http://opposite.stsci.edu/pubinfo/latest.html>.

GIF and JPEG versions of the illustration are available via anonymous ftp to opposite.stsci.edu in [/pubinfo/gif/9823.gif](http://opposite.stsci.edu/pubinfo/gif/9823.gif) and [/pubinfo/jpeg/9823.jpg](http://opposite.stsci.edu/pubinfo/jpeg/9823.jpg).

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For Release

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June 25, 1998

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RELEASE: 98-111

NASA TECHNOLOGY LEADS TO INNOVATIVE VEHICLE TRACKING SYSTEM

A NASA technology developed to help astronomers probe the depths of the universe is at work today helping municipalities and private businesses track the movements of vehicles in large fleet operations.

Researchers at NASA's Marshall Space Flight Center, Huntsville, AL, first developed the technology -- a software program -- to handle the flow of enormous amounts of information. The challenge was posed by data generation of experiments conducted in orbit on Space Shuttle Spacelab missions.

The technology was later modified to help Marshall test NASA's Advanced X-ray Astrophysics Facility (AXAF), the world's most powerful X-ray observatory, planned for launch later this year. Marshall engineers Walter Robinson and Larry Taormina worked with engineers from Quality Research of Huntsville to modify the original program so it would pull specific bits of temperature and vacuum information from the stream of information collected in tests of the observatory.

"We were faced with trying to find specific data 'needles' in a vast information 'haystack' that was moving at the speed of light," said Scott Johnson, a software architect with Quality Research.

As it does with many of the technologies NASA develops for space exploration, Marshall's technology transfer office offered the technology for commercial application, hoping it might improve the quality of life on Earth. In a commercial spinoff of the NASA developed software, AVL Systems of Huntsville created the Quality Research (QR) Track System -- to track vehicles instead of information.

-more-

Charles M. Musitano, AVL Systems president and chief executive officer, said the system is affordable and has many applications in the public and private sector. "For between \$500 and \$1000 and a nominal annual maintenance fee, municipalities can track police and fire vehicles, ambulances and public works vehicles," said Musitano. "Each vehicle transmits a signal to the base station through one of several communications devices."

Musitano said the city of Memphis, TN, uses the system to track sludge pumping trucks for maintaining the city's sewer system. "A dispatcher monitors the location of all vehicles, determines when each vehicle operator's task is completed, and reassigns the vehicle to new tasks," said Musitano.

The system can monitor many types of vehicle fleet operations including delivery vans, armored cars and taxis. It also can help track vehicles carrying hazardous cargo. "When accidents occur, emergency response crews traveling with equipment to handle the hazardous material can respond much more quickly. If an evacuation of the area is necessary, that decision can be made much sooner. The system also can be used to monitor railroad tank cars, ships and aircraft," Musitano pointed out.

Musitano also believes the technology has potential uses in vehicle theft prevention and recovery, locating school vehicles and as a tool to help emergency crews locate lost hikers. "Using a two-way interchange of data, exact locations can be used to assist in emergency recovery," Musitano said.

- end -

Note to editors: Photographs and video to support this release are available to media representatives by calling Steve Calatrello in the Marshall Media Relations Office at 256/544-1634.

NewsRelease

National Aeronautics and
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For Release

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June 26, 1998

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European Space Agency Headquarters, Paris, France
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RELEASE: 98-112

SOHO SPACECRAFT OBSERVATIONS INTERRUPTED

Ground controllers lost contact with the NASA/European Space Agency (ESA) Solar and Heliospheric Observatory (SOHO) spacecraft June 24 during maintenance operations.

SOHO went into emergency sun reacquisition mode, and ground controllers lost contact with the spacecraft at 7:16 p.m. EDT on June 24. This mode is activated when an anomaly occurs and the spacecraft loses its orientation toward the Sun. When this happens, the spacecraft automatically tries to point itself toward the Sun again by firing its attitude control thrusters under the guidance of an onboard Sun sensor.

Efforts to re-establish contact with SOHO did not succeed and telemetry was lost. Subsequent attempts using the full NASA Deep Space Network capabilities have so far also not been successful.

Engineers from NASA and ESA are attempting to reestablish contact with the spacecraft.

SOHO is a joint mission of the European Space Agency and NASA. It was launched aboard an Atlas IIAS rocket from Cape Canaveral Air Station, FL, on Dec. 2, 1995, and mission operations are directed from NASA's Goddard Space Flight Center, Greenbelt, MD.

-more-

-2-

In April 1998, SOHO successfully completed its nominal two-year mission to study the Sun's atmosphere, surface and interior. Major science highlights include the detection of rivers of plasma beneath the surface of the Sun; the discovery of a magnetic "carpet" on the solar surface that seems to account for a substantial part of the energy that is needed to cause the very high temperature of the corona, the Sun's outermost layer; the first detection of flare-induced solar quakes; the discovery of more than 50 sungrazing comets; the most detailed view to date of the solar atmosphere; and spectacular images and movies of coronal mass ejections, which are being used to improve the ability to forecast space weather.

More information and images from SOHO can be found on the Internet at:

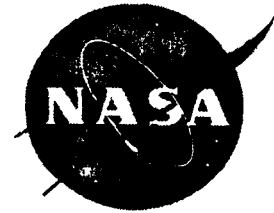
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For Release

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June 26, 1998

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RELEASE: 98-113

NEW SATELLITE DATA SHOW RETREAT OF EL NINO, PACIFIC OCEAN IN TRANSITION

New sea surface height measurements taken by the ocean-observing TOPEX/Poseidon satellite show the equatorial Pacific in a state of flux with the warm, high sea level El Nino-spawned waters in retreat and areas of colder, low sea level waters on the increase.

"Sea level is a measure of the heat stored in the ocean. In the last month or so, the tropical Pacific has been switching from warm to cold. Lower sea level indicates less heat, hence a colder ocean," said Dr. Lee-Lueng Fu, the project scientist for the U.S.-French TOPEX/Poseidon mission at NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA. "It appears now the central equatorial Pacific Ocean will stay colder than normal for some time to come because sea level is about seven inches below normal, creating a deficit in the heat supply to the surface waters. It is not clear yet, however, if this current cooling trend will eventually evolve into a long-lasting La Nina situation."

An El Nino condition begins when steady westward blowing trade winds weaken and even reverse direction. This change in the winds allows a large mass of warm water that is normally located near Australia to move eastward along the equator until it reaches the coast of South America.

This displaced pool of unusually warm water affects evaporation, where rain clouds form -- and, in turn, alters the typical atmospheric jet stream patterns around the world. The change in the wind strength and direction also impacts global weather patterns. The climatic event has been given the name El Nino, a Spanish term for "the Christ child," because the warm current first appeared off the coast of South America around Christmas.

-more-

The 1997-98 El Nino has been the strongest ever recorded. This phenomenon was responsible for record rainfall in California, heavy flooding in Peru, drought and wildfires in Indonesia, tornadoes in the southeast United States and loss of life and property damage worldwide. TOPEX/Poseidon's sea surface height measurements have provided scientists with their first detailed view of how El Nino's warm pool behaves because the satellite measures the changing sea surface height with unprecedented precision.

A "La Nina" (Spanish for "little girl") is essentially the opposite of an El Nino, where the trade winds are stronger than normal and the cold water that normally exists along the coast of South America extends to the central equatorial Pacific. A La Nina situation also changes global weather patterns and is associated with less moisture in the air, resulting in less rain along the coasts of North and South America. TOPEX/Poseidon will be able to track a potentially developing La Nina with the same accuracy.

"It may be too soon to say 'good-bye' El Nino and 'hello' La Nina, because the effects of El Nino will remain in the climate system for a long time," said Dr. Bill Patzert, a research oceanographer at JPL. "However, if the Pacific is transitioning to a La Nina, we'd expect to see clear, strong indication of it by late summer or early fall -- in approximately August or September -- just like we did last year with El Nino. The strongest impacts of a potential La Nina wouldn't be felt in the U.S. until next winter." A La Nina does not automatically follow an El Nino, Patzert added.

Developed by NASA and the Centre National d'Etudes Spatiales (CNES), the TOPEX/Poseidon satellite uses an altimeter to bounce radar signals off the ocean's surface to get precise measurements of the distance between the satellite and the sea surface. These data are combined with measurements from other instruments that pinpoint the satellite's exact location in space. Every ten days, scientists produce a complete map of global ocean topography, the barely perceptible hills and valleys found on the sea surface.

Ocean temperatures affect ocean topography, which is why the TOPEX/Poseidon radar altimeter is able to monitor the changing El Nino and La Nina conditions. With detailed knowledge of ocean topography, scientists can then calculate the speed and direction of worldwide ocean currents.

The new satellite image from June is available at URL:

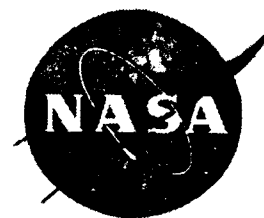
http://www.jpl.nasa.gov/el_nino

JPL, a division of the California Institute of Technology, manages the TOPEX/Poseidon mission for NASA's Earth Science Enterprise, Washington, DC.

NewsRelease

National Aeronautics and
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Washington, D.C. 20546
(202) 358-1600



For Release

Sarah Keegan
Headquarters, Washington, DC
(Phone: 202/358-1600)

June 26, 1998

RELEASE: 98-114

NOVAK AND SUTTON NAMED TO KEY NASA ROLES

NASA Administrator Daniel S. Goldin today named Vicki A. Novak Associate Administrator for Human Resources and Education and Jeffrey E. Sutton Associate Administrator for Management Systems and Facilities, effective immediately.

Novak has 25 years of Federal Government service during which she has served in a variety of human resources positions at the Departments of Commerce, Housing and Urban Development, and Transportation.

Since coming to NASA in 1989, she served in several key positions before her selection as Director of Personnel in February 1993. These included Special Assistant to the Director of Personnel, Personnel Officer for NASA Headquarters, and Chief of the Agency Personnel Policy Branch.

"Vicki and I discussed the top priorities for the human resources and education organization, and agreed that the safety, care and well-being of our workforce is clearly the top priority," Goldin said. "She will do an outstanding job for the agency."

Novak has received many awards during her career, most notably, the Department of Transportation's Secretary's Award for Meritorious Achievement and the NASA Exceptional Achievement Medal.

Novak is a member of several professional associations including the International Personnel Management Association and the Senior Executives Association, and she is actively involved in raising funds for children's charities.

She received her Bachelor's Degree from the University of Tennessee and graduated Phi Beta Kappa in 1973.

- more -

As Associate Administrator for Management Systems and Facilities, Sutton will provide Agencywide executive leadership for the functions of facilities engineering; environmental, security, logistics and aircraft management; contractor industrial relations; and management controls and assessment.

Sutton has over 27 years of Federal service in which he has progressed through a series of increasingly responsible and varied positions at the Air Force and NASA. He has been acting in the associate administrator role since November. Prior to that, among other key assignments at NASA, he served as Director, Supply and Equipment Management Division; Director, Logistics and Security Division; and Director, Security, Logistics, Aircraft, and Industrial Relations Division.

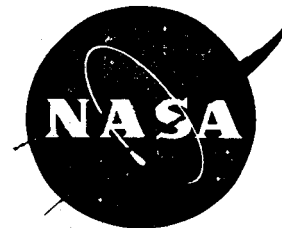
"I stressed to Jeff that I want NASA's workplaces to be as safe, efficient and productive as possible. I then charged him to ensure this outcome from the unique vantage point of his oversight of facilities and security around the Agency," said Goldin.

Sutton has a Bachelor of Arts degree from the University of Minnesota and Master of Public Administration degree (with honors) from the University of Southern California. The more recent of many awards from the Air Force, NASA and other agencies include the Presidential Rank of Meritorious Executive, the NASA Exceptional Service Medal, the President's Council on Management Improvement Award of Management Excellence, and the General Services Administration Excellence in Administration Award.

Video Advisory

National Aeronautics and
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Washington, DC 20546
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For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

June 29, 1998

VIDEO ADVISORY: V98-70

LATEST FINDINGS FROM PATHFINDER MISSION ONE YEAR LATER

Today's 3:00 pm video file provides animation and images from the Mars Pathfinder Mission. NTV will broadcast the Mars Pathfinder news briefing live at 1 p.m. EDT, originating from NASA's Jet Propulsion Laboratory (JPL) in Pasadena, CA. Animation and images will be fed at approximately 12:55 p.m. EDT.

ITEM 1: PATHFINDER ONE YEAR LATER

For more information contact Doug Isbell at (202) 358-1753 or Diane Ainsworth at (818) 354-5011.

ITEM 2: REPLAY - FIRES IN FLORIDA

ITEM 3: REPLAY - 1997-98 EL NINO OBSERVATIONS FROM TOPEX-POSEIDON

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

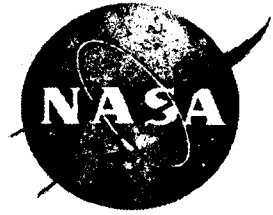
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

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National Aeronautics and
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For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

June 29, 1998

Diane Ainsworth
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-115

WATER HISTORY, ROCK COMPOSITION AMONG LATEST FINDINGS A YEAR AFTER MARS PATHFINDER

A year after the landing of Mars Pathfinder, mission scientists say that data from the spacecraft paint two strikingly different pictures of the role of water on the red planet, and yield surprising conclusions about the composition of rocks at the landing site.

"Many of the things that we said last summer during the excitement after the landing have held up well," said Dr. Matthew Golombek, Pathfinder project scientist at NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA. "But we have now had more time to study the data and are coming up with some new conclusions."

Similar to ongoing science results from NASA's Mars Global Surveyor spacecraft currently in orbit around Mars, Pathfinder data suggest that the planet may have been awash in water three billion to 4.5 billion years ago. The immediate vicinity of the Pathfinder landing site, however, appears to have been dry and unchanged for the past two billion years.

Several clues from Pathfinder data point to a wet and warm early history on Mars, according to Golombek. Magnetized dust particles and the possible presence of rocks that are conglomerates of smaller rocks, pebbles and soil suggest copious water in the distant past. In addition, the bulk of the landing site appears to have been deposited by large volumes of water, and the hills on the horizon known as Twin Peaks appear to be streamlined islands shaped by water.

But Pathfinder images also suggest that the landing site is essentially unchanged since catastrophic flooding sent rocks tumbling across the plain two billion years ago. "Since then this locale has been dry and static," he said.

-more-

While the area appears to have been untouched by water for eons, wind appears to have been steadily eroding rocks at the landing site. Analysis of Pathfinder images shows that about one to two inches (three to five centimeters) of material has been stripped away from the surface by wind, Golombek noted.

"Overall, this site has experienced a net erosion in recent times," said Golombek. "There are other places on Mars that are net 'sinks,' or places where dust ends up being deposited. Amazonis Planitia, for example, probably has about three to six feet (one to two meters) of fine, powdery dust that you would sink into if you stepped on it."

Chemical analysis of a number of rocks by the alpha proton X-ray spectrometer (APXS) instrument on Pathfinder's mobile Sojourner rover, meanwhile, reveals an unexpected composition that scientists are still trying to explain.

The current assessment of data from this instrument suggests that all of the rocks studied by the rover resemble a type of volcanic rock with a high silicon content known on Earth as andesite, covered with a fine layer of dust. All of the rocks appear to be chemically far different from meteorites discovered on Earth that are believed to have come from Mars.

"The APXS tells us that all of these rocks are the same thing with different amounts of dust on them," said Golombek. "But images suggest that there are different types of rocks. We don't yet know how to reconcile this."

When molten magma oozes up from a planet's mantle onto the surface of the outer crust, it usually freezes into igneous rock of a type that geologists call a basalt. This is typical on the floors of Earth's oceans, as well as on the maria or "seas" of the Moon and in many regions of Mercury and Venus. By contrast, andesites typically form on Earth in tectonically active regions when magma rises into pockets within the crust, where some of its iron and magnesium-rich components are removed, leaving rock with a higher silicon content. "We don't believe that Mars has had plate tectonics, so these andesites must have formed by a different mechanism," Golombek said.

The rocks studied by Pathfinder most closely resemble andesites found in Iceland and the Galapagos Islands, tectonic spreading centers where plates are being pushed apart, said Dr. Joy Crisp of JPL. Andesites from these areas have a different chemical signature from andesites formed at subduction zones (areas where one edge of a crustal plate descends below another), mostly because wet ocean sediments carry more water down into the mantle at the subduction zones. "On Mars, where the water content is probably lower and there is no evidence of subduction, we would expect a closer chemical similarity to Iceland andesites," said Crisp.

The Martian rocks may have other origins, however. They could be sedimentary and influenced by water processes; they could be formed by melting processes resulting from a meteor impact; or, a third alternative is that the rocks might be basaltic, but covered by a silicon-rich weathering coating. "In any event, the presence of andesites on Mars is a surprise, if it is borne out as we study the data further," said Crisp. "Most rocks on Mars are expected to be basalts lower in silicon. If these are in fact andesites, they are probably not very abundant."

Scientists are looking forward to more data from the Thermal Emission Spectrometer instrument on the Mars Global Surveyor to reveal more about the chemical composition of the planet's surface, especially once the orbiting spacecraft begins its prime circular mapping mission in spring 1999.

In other recent Pathfinder science findings, Dr. Steven Metzger of the University of Nevada found direct evidence of gusting winds called "dust devils" in images from Pathfinder's lander. Such dust devils had been seen in some Viking orbiter images and inferred from measurements of atmospheric pressure and winds by other instruments on the Pathfinder lander, but were not spotted in actual surface images until Metzger's discovery.

JPL planetary scientist Dr. Diana Blaney has been using data from Pathfinder, other spacecraft missions and ground-based observations to study weathering on Mars. Her work suggests that Mars is uniformly covered by a fine coating of dust formed by an unusual process involving meteor impacts and volcanic gases that add sulfur.

NASA's next Mars missions, the 1998 Mars Climate Orbiter and Mars Polar Lander, are in testing now for launch in December and January, respectively. Whereas Pathfinder's science focus was on exploring rocks with its mobile robotic geologist, the Mars Polar Lander will focus on a search for water under the planet's surface, equipped with a robot arm that will dig into the soil at the landing site near the planet's south pole.

Launched on December 4, 1996, Pathfinder reached Mars on July 4, 1997, directly entering the planet's atmosphere and bouncing on inflated airbags as a technology demonstration of a new way to deliver a lander and rover to Mars. The lander operated nearly three times its design lifetime of 30 days, while the rover operated 12 times its design lifetime of seven days.

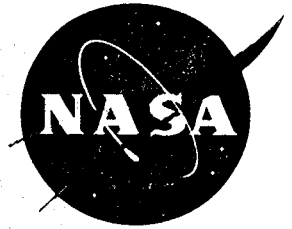
During the mission, the spacecraft relayed 2.3 gigabits of data to Earth. This unexpectedly large volume of information included 16,500 images from the lander's camera, 550 images from the rover camera, 16 chemical analyses of rocks and soil, and 8.5 million measurements of atmospheric pressure, temperature and wind.

Mars Pathfinder was designed, built and operated by JPL for NASA's Office of Space Science, Washington, DC. JPL is a division of the California Institute of Technology, Pasadena, CA.

Video Advisory

National Aeronautics and
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For Release

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Headquarters, Washington, DC
(Phone: 202/358-1712)

June 30, 1998

VIDEO ADVISORY: V98-71

X-33 THERMAL PROTECTION SYSTEM TESTS COMPLETE; NASA SUIT GIVES VIRGINIA BOY HIS FIRST DAY IN THE SUN

Today's video file provides footage of NASA's F-15B Aerodynamic Flight Facility aircraft which successfully completed flight testing of Thermal Protection System (TPS) materials for the X-33 Advanced Technology Demonstrator at the Dryden Flight Research Center, Edwards, CA. Also on NTV is b-roll of a six-year-old Virginia Beach, VA, boy who can explore Earth during daylight for the first time, thanks to new NASA space suit technology.

- ITEM 1: F-15 FLIGHT TEST**
- ITEM 1a: INTERVIEWS - CLEON LACEFIELD, X-33 PROGRAM MANAGER, LOCKHEED MARTIN SKUNK WORKS**
- ITEM 1b: INTERVIEWS - DAN DUMBACHER, NASA X-33 DEPUTY PROGRAM MANAGER, DRYDEN SPACE FLIGHT CENTER**

For more information contact James Cast at (202) 358-1779 or Gray Creech at (805) 258-2664.

ITEM 2: IMPROVED SPACE SUIT TECHNOLOGY

For more information contact Audrey Schwartz Rivers at (281) 483-5111.

ITEM 3: REPLAY - STS-95 TRAINING

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

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National Aeronautics and
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For Release

Don Nolan-Proxmire
Headquarters, Washington, DC
(Phone: 202/358-1983)

June 30, 1998

Audrey Schwartz Rivers
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-116

IMPROVED NASA SPACE SUIT TECHNOLOGY GIVES VIRGINIA BOY HIS FIRST DAY IN THE SUN

Like an astronaut setting foot on a new world, a six-year-old Virginia Beach, VA, boy can explore Earth during daylight for the first time, thanks to new NASA space suit technology.

On April 19, Mikie Walker became the first American child to receive a modified "space suit" that protects him from the sun's ultraviolet rays and other light sources. Mikie has porphyria, a genetic disorder that causes extreme and potentially dangerous sunlight sensitivity that can result in chronic skin inflammation, blistering, inflammation of nerves, abdominal pain and other disturbances. For some children with light sensitivity disorders, even a 40-watt light bulb can be dangerous.

"Mikie's new favorite outdoor activities include playing in dirt and rolling on the lawn," his mother Angela Walker said. "He enjoys this so much that, at the end of the day, he resembles a soil-encrusted Apollo moonwalker."

NASA's Johnson Space Center (Houston, TX) Office of Technology Transfer and Commercialization offered the suit to Mikie through an agreement with the not-for-profit HED and Related Disorders Foundation, Hampton, VA.

"It's amazing to think that NASA astronauts having walked on the Moon means a child now can play in the sunlight," said Sarah Moody, founder and president of the HED Foundation, which donates cooling gear and other garments to children with hypohidrotic ectodermal dysplasia (HED), multiple sclerosis, spina bifida, cerebral palsy and other genetic disorders. HED is a medical disorder characterized by a lack of sweat glands, which can lead to heat exhaustion, heatstroke and even death. Thirty children are on the foundation's waiting list for a suit like Mikie's.

-more-

The pint-sized space suit blocks nearly all of the sun's ultraviolet rays. Mikie sports an improved version of a prototype protective suit provided last September to four-year-old Kyle and two-year-old Ryan Richards of Shotton Colliery, England. The brothers have Polymorphic Light Reaction Syndrome, a serious allergy to light that causes severe skin lesions. Without the suits, the brothers could venture outside only at night. Last fall, the boys, who looked like junior astronauts, wore their protective suits to Disney World in Orlando, FL, and also viewed a Space Shuttle launch at the Kennedy Space Center in Florida.

Thanks to the "expert" feedback provided by the Richards brothers, NASA developed an upgraded version of the protective garment. The suit's headpiece was redesigned totally to enhance ventilation and reduce overheating in the head area.

"The body cooling system was changed from a battery-powered liquid pump unit to a passive phase change vest, made of material similar to refrigerator cold packs used for sports injuries. The vest is simple, less expensive and more durable than the original battery pump," said Robert Dotts, assistant director of Technology Transfer and Commercialization at Johnson. The new phase change vest is easier to use for both children and their families and brought down the cost of the entire UV suit, Dotts said.

MicroClimate Systems, Inc., of Sanford, MI, supplied the phase change vest, and the Solar Protective Factory of Carmichael, CA, provided the UV protective outer garments. The DRLI Company, which supplies protective coatings for astronauts' space suit helmets, supplied the clear UV-blocking coating for Mikie's ski-goggle-like face visor.

According to HED Foundation's Moody, who presented the NASA suit to the Walker family, a giggly Mikie couldn't wait to don his "space suit" and explore the outdoor world of his home planet in daylight. The family headed for a local lake and, also for the first time, Mikie could look at the scenery out the van's windows. Previously, the passenger windows of any vehicle in which Mikie rode, had to be covered completely to prevent exposure to sunlight.

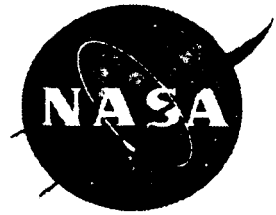
For more information about UV protective suits for children with applicable disorders, contact the HED Foundation at P.O. Box 9421, Hampton, VA, 23670, phone 757/826-0065, or check out the web site at:

<http://www.microclimate.com/hed/>

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For Release

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June 30, 1998

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(Phone: 256/544-0031)

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Lockheed Martin Skunk Works, CA
(Phone: 805/572-4153)

RELEASE: 98-117

X-33 THERMAL PROTECTION SYSTEM TESTS COMPLETE

NASA's F-15B Aerodynamic Flight Facility aircraft has successfully completed flight testing of Thermal Protection System (TPS) materials for the X-33 Advanced Technology Demonstrator at NASA's Dryden Flight Research Center, Edwards, CA.

Six flights were flown to test the durability of the TPS materials at flight velocities above the speed of sound, providing data to the X-33 demonstrator program team. The X-33 is scheduled to begin test flights in July 1999.

"This is an excellent example of all the testing the X-33 program is performing on the challenging technologies we need for a reusable launch vehicle," said Dan Dumbacher, NASA's X-33 deputy program manager.

Thermal protection systems are used on spacecraft to protect them during flight, primarily as a "heat shield" during reentry into Earth's atmosphere. Though the X-33 is a sub-orbital technology demonstrator for an eventual commercially developed and operated single-stage-to-orbit launch system, the X-33 will encounter an extreme heating environment similar to what such a vehicle will encounter during orbital spaceflight and atmospheric reentry.

-more-

-2-

The F-15B reached an altitude of 36,000 feet and a top speed of Mach 1.4 during the flight series. No damage or signs of wear from high speed or maneuvering were apparent on any of the TPS materials, providing further confidence to the X-33 team in the ability of the materials to successfully protect the X-33 and follow-on vehicles in the harsh environment in which they will fly.

"With the F-15B we were able to accomplish the X-33 TPS durability flights in a timely and cost-effective manner," said Roy Bryant, Dryden's F-15B project manager. "The X-33 TPS team is very happy with the data obtained during these tests. A satisfied customer indicates a job well done by the F-15 project team."

The TPS material samples include metallic Inconel tiles, soft Advanced Flexible Reusable Surface Insulation tiles and sealing materials. They were flown attached to the forward-left side position of the F-15B's Flight Test Fixture II, a device attached underneath the aircraft to carry experiments. In-flight video from the aircraft's onboard video system and chase aircraft photo and video cameras documented the condition of the TPS materials during flights.

"I appreciated the expeditious manner in which this flight project was accomplished," said Gary Trippensee, Dryden's X-33 project manager. "The combined B.F. Goodrich Co., Richfield, OH; NASA's Ames Research Center, Moffett Field, CA; and Dryden test team provided valuable X-33 TPS flight qualification data efficiently and timely," Trippensee said.

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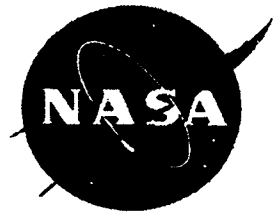
NOTE TO EDITORS: Photos are available to media representatives from NASA Headquarters by calling 202/358-1900; from the Dryden Photo Archive by calling 805/258-2664; or on the World Wide Web at:

<http://www.dfrc.nasa.gov/gallery/photo/index.html>

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For Release

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June 30, 1998

Bill Steigerwald
Goddard Space Flight Center, Greenbelt, MD
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European Space Agency Headquarters, Paris, France
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RELEASE: 98-118

EFFORTS TO RECOVER SOHO SPACECRAFT CONTINUE AS INQUIRY BOARD CO-CHAIRS NAMED

Engineers are continuing efforts to reestablish contact with the NASA/European Space Agency (ESA) Solar and Heliospheric Observatory (SOHO) spacecraft using NASA's Deep Space Network (DSN). Contact with SOHO was lost on June 24 during maintenance operations.

A team of experts from ESA and Matra Marconi Space, prime contractor for the SOHO spacecraft, gathered at NASA's Goddard Space Flight Center, Greenbelt, MD, to assist the NASA Flight Operations Team in assessing the situation and analyzing the spacecraft status should contact be reestablished.

Engineers are concentrating on gaining a full understanding of the events which led to the loss of signal, information which might help them devise procedures which may recover contact with SOHO. Commands are being sent to SOHO about once per minute through the DSN's 34-meter antennas instructing the spacecraft to activate its transmitters.

Based on the last telemetry data received from SOHO, engineers said it appears most likely that the spacecraft is slowly spinning in such a way that its solar arrays, which generate power, either do not face the Sun at all or do not receive adequate sunlight to generate power. However, based on the last data received, it appears that SOHO's solar panels may be exposed to an increasing amount of sunlight each day as it orbits the Sun. If this assumption is correct, within a few weeks enough sunlight might be hitting the solar panels to generate power to charge its batteries.

- more -

- 2 -

The incident will be the subject of a joint ESA/NASA inquiry board co-chaired by Prof. Massimo Trella, ESA Inspector General, and Dr. Michael Greenfield, Deputy Associate Administrator for the Office of Safety and Mission Assurance, NASA Headquarters, Washington, DC. The other members of the board will be selected from ESA and NASA as well as from the scientific community. The board is expected to convene later this week at NASA's Goddard Space Flight Center, Greenbelt, MD.

More information, images and status reports from SOHO can be found on the Internet at:

<http://sohowww.nascom.nasa.gov/>

- end -